MONASH University

Exploring risk and opportunity to improve the health of behaviourally bisexual men in Vientiane, Laos

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Abstract

Regionally, Asia bears a high proportion of global burden of disease relating to human immunodeficiency virus (HIV), and men who have sex with men (MSM) are disproportionately affected. The research presented in this thesis focuses on MSM in Lao People's Democratic Republic (Laos). Whilst the prevalence of HIV among reproductive-aged adults in Laos is low (0.2%), HIV prevalence among MSM is considerably higher, estimated at 5.6% in Vientiane in 2007. MSM are a heterogeneous group of men with respect to identity, sexual practices and sexual attraction. Behaviourally bisexual men constitute a substantial proportion of MSM in Laos and more broadly in Asia. A systematic review of studies in Asia found that MSM with bisexual behaviour have similar prevalence of HIV and sexually transmitted infections (STIs) to MSM with homosexual behaviour, but are less likely to have received an HIV test. The involvement of behaviourally bisexual men in HIV interventions is essential to achieving HIV control and maintaining low HIV prevalence in Laos. This thesis describes a program of research designed to produce a better understanding of sexual risk and health needs of behaviourally bisexual men in Laos.

The research informing this thesis was conducted in Vientiane, Laos in two phases using a mixed-methods approach. Firstly, quantitative data on sexual behaviour, alcohol and other drug use, and HIV knowledge was collected in 2010 using a behavioural survey with a social network design. Secondly, qualitative data collected in a follow-up study in 2013-14 enabled exploration of the motivations, influences, and moderators of behaviour and health-care seeking among behaviourally bisexual men in Vientiane.

The research results demonstrate the complexity of sexual orientation in Laos. Young behaviourally bisexual men in Laos associate with different sexual identities and report varying sexual preferences, but most commonly identify as heterosexual. A high proportion of bisexual men reported multiple sex partners, concurrent male and female partners, inconsistent condom use, consuming alcohol before sex, and both buying and selling sex. Despite reporting high-risk sexual behaviours for HIV and STI, utilisation of healthcare services was low; uptake of HIV testing was poor, and use of STI services limited to symptomatic treatment. Common barriers to testing were low perception of risk, expectation of symptoms, fear of HIV, shyness, anticipation of stigma, confidentiality concerns, and waiting times.

This research highlights the need for integrated HIV and STI services and improved health promotion targeting bisexual men in Laos. Strategies are needed to generate demand for both HIV and STI testing, improve the capacity of sexual healthcare providers, and promote available services. Heath promotion messages aimed at reaching bisexual men should emphasise the importance of consistent condom use with all sex partners, lubricant use and regular HIV and STI testing. Based on these findings, a range of recommendations for the content and delivery of interventions to reach behaviourally bisexual men are made. These include both mainstream and targeted channels, and the relevance of internet and mobile phone technologies is discussed. These findings have practical

implications for the delivery of HIV prevention and sexual health promotion in Laos and have the potential to reduce HIV and STI transmission in this high-risk group.

General declaration

Declaration for thesis including published works

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes four original papers published in peer-reviewed journals and two unpublished publications. The core theme of the thesis is the epidemiology of sexual risk behaviour among bisexual men in Laos. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the candidate, working within the Department of Epidemiology and Preventive Medicine under the supervision of Professor Margaret Hellard, Professor Robert Power, and Dr Vanphanom Sychareun. The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.

In the case of Chapters 2 to 7, my contribution to the work involved the following:

Thesis chapter	Publication title	Publication status	Nature and extent of candidate's contribution
Two	HIV and sexual risk among men who have sex with men in women in Asia: a systematic review	In press	Development of review concept and protocol, systematic search, study review, data analysis, interpretation of results, manuscript preparation.
Three	Identifying risk: a comparison of risk between heterosexual-identifying bisexual men and other bisexual men in Vientiane, Laos	Published	Development of analysis concept, data analysis, interpretation of results, manuscript preparation
Four	Setting the scene: Locations for meeting sex partners among behaviourally bisexual men in Vientiane, Laos, and opportunities for health promotion	Published	Development of analysis concept, data analysis, interpretation of results, manuscript preparation
Five	It goes both ways: a cross-sectional study of buying and selling sex among behaviourally bisexual men in Vientiane, Laos	Published	Development of analysis concept, data analysis, interpretation of results, manuscript preparation
Six	'We might get some free beers': Experience and motivation for transactional sex among behaviourally bisexual men in Vientiane, Laos	In press	Study design, project management, partial data collection, data management, data analysis, interpretation of results, manuscript preparation
Seven	Factors influencing access to sexual healthcare among behaviourally bisexual men in Vientiane, Laos: a qualitative exploration	Published	Study design, project management, partial data collection, data management, data analysis, interpretation of results, manuscript preparation

I have renumbered sections of submitted or published papers in order to generate consistent presentation within the thesis.

Student signature: [redacted] **Date:** 11/9/2015

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student and co-authors' contributions to this work.

Main Supervisor signature: [redacted] **Date:** 11/9/2015

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Research outcomes during candidature

A list of publications and oral presentations during the PhD candidature is presented below. Works related to the thesis and included as a chapter (*) or an appendix (#) are indicated by the specified symbol.

Peer-reviewed publications

* **Bowring AL**, Veronese V, Doyle JS, Stoove M, Hellard M. HIV and sexual risk among men who have sex with men and women in Asia: a systematic review and meta-analysis. *AIDS Behav*. Forthcoming 2016.

-- See Chapter 2

* **Bowring AL**, van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Phimphachan C, et al. Identifying risk: a comparison of risk between heterosexual-identifying bisexual men and other bisexual men in Vientiane, Laos. *AIDS Educ Prev*. 2014; 26(2):109-21.

- - See Chapter 3 / Appendix A-1

* **Bowring AL**, van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Phimphachan C, et al. Setting the scene: Locations for meeting sex partners among behaviourally bisexual men in Vientiane, Laos, and opportunities for health promotion. *AIDS Educ Prev*. 2014; 26(6):538-53.

- - See Chapter 4 / Appendix A-2

* **Bowring AL**, van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Chanliivong N, et al. It goes both ways: a cross-sectional study of buying and selling sex among behaviourally bisexual men in Vientiane, Laos. *Sex Health*. 2015;12(5):405-10.

- - See Chapter 5 / Appendix A-3

* **Bowring AL,** Pasomsouk N, Higgs P, Sychareun V, Hellard M, Power R. Motivation, experience, and negotiation of transactional sex among behaviourally bisexual men in Vientiane, Laos. *Arch Sex Behav*. Forthcoming 2016.

-- See Chapter 6

* **Bowring AL**, Pasomsouk N, Higgs P, Sychareun V, Hellard M, Power R. Factors influencing access to sexual healthcare among behaviourally bisexual men in Vientiane, Laos: a qualitative exploration. *Asia Pac J Public Health*. 2015;27(8):820-34.

-- See Chapter 7 /Appendix A-4

Bowring AL, Vella AM, Degenhardt L, Hellard M, Lim MS. Sexual identity, same-sex partners and risk behaviour among a community-based sample of young people in Australia. *Int J Drug Policy*. 2015; 26(2):153-61.

Weaver ER, **Bowring AL**, Guy R, van Gemert C, Hocking JS, Boyle DI, et al. Reattendance and chlamydia retesting rates at 12 months among young people attending Australian general practice clinics 2007–10: a longitudinal study. *Sex Health*. 2014; 11(4):366-9.

Ward J, Goller J, Ali H, **Bowring A**, Couzos S, Saunders M, et al. Chlamydia among Australian Aboriginal and/or Torres Strait Islander people attending sexual health services, general practices and Aboriginal community controlled health services. *BMC Health Serv Res*. 2014; 14(1):285.

Vella AM, Agius PA, **Bowring AL**, Hellard ME, Lim MSC. Early age at first sex: associations with sexual health and sociodemographic factors among a sample of young music festival attendees in Melbourne. *Sex Health*. 2014; 11(4):359-65.

Lim MS, Gold J, **Bowring AL**, Pedrana AE, Hellard ME. Young people's comparative recognition and recall of an Australian government sexual health campaign. *Int J STD AIDS*. 2014; 26(6):398-401.

Jenkinson R, **Bowring A**, Dietze P, Hellard M, Lim MSC. Young risk takers: Alcohol, illicit drugs, and sexual practices among a sample of music festival attendees. *Sex Transm Dis*. 2014; 2014(Article ID 357239):1-6.

van Gemert C, Vongsaiya K, Hughes C, Jenkinson R, **Bowring AL**, Sihavong A, et al. Characteristics of a sexual network of behaviorally bisexual men in Vientiane, Lao PDR, 2010. *AIDS Educ Prev*. 2013; 25(3):232-43.

-- See Appendix A-5

Bowring AL, Luhmann N, Pont S, Debaulieu C, Derozier S, Asouab F, et al. An urgent need to scale-up injecting drug harm reduction services in Tanzania: Prevalence of blood-borne viruses among drug users in Temeke District, Dar-es-Salaam, 2011. *Int J Drug Policy*. 2013; 24(1):78-81.

Bowring AL, Goller JL, Gouillou M, Harvey C, Bateson D, McNamee K, et al. Chlamydia testing and retesting patterns at family planning clinics in Australia. *Sex Health*. 2013; 10(1):74-81.

Bowring A, Gouillou M, Hellard M, Dietze P. Comparing short versions of the AUDIT in a community-based survey of young people. *BMC Public Health*. 2013; 13(1):301.

Lim MS, **Bowring AL**, Gold J, Aitken CK, Hellard ME. Trends in sexual behavior, testing, and knowledge in young people; 2006–2011. *Sex Transm Dis*. 2012; 39(11):831-4.

Bowring AL, Gouillou M, Guy R, Kong FY, Hocking J, Pirotta M, et al. Missed opportunities—low levels of chlamydia retesting at Australian general practices, 2008–2009. *Sex Transm Infect*. 2012; 88:330-4.

Bowring A, Peeters A, Freak-Poli R, Lim M, Gouillou M, Hellard M. Measuring the accuracy of self-reported height and weight in a community-based sample of young people. *BMC Med Res Methodol*. 2012; 12(1):175.

Other research outputs

Bowring AL, Pasomsouk N, Parnell B, Power R, Hellard M. Improving access to sexual health information among bisexual men in Vientiane, Laos (Policy Brief 1). Melbourne: Burnet Institute; 2015.

-- See Appendix B

Bowring A, Pasomsouk N, Parnell B, Power R, Hellard M. High sexual risk and low HIV testing among bisexual men in Vientiane, Laos (Policy Brief 2). Melbourne: Burnet Institute; 2015.

-- See Appendix C

Oral presentations

(Presenting author underlined)

Bowring AL, Van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Phimphachan C, et al. Sexual identity, risk, and bisexual behaviour among men in Vientiane, Laos, 2010. *Australasian Sexual Health Conference*; 2013 Oct 23-25; Darwin, Australia.

Bowring A, Stoove M, Luhmann N, Debaulieu C, Stéphanie D, Pont S, et al. A critical need to scale-up of HIV prevention and harm reduction services for people who inject drugs in Tanzania: results from a HIV and hepatitis C prevalence study in Dar es Salaam, 2011. *XIX International AIDS Conference*; 2012 July 22-27; Washington DC, USA.

Bowring A, Pasomsouk N, Higgs P, Sychareun V, Hellard M, Power R. Knowledge, attitudes and behaviour relating to sexual care among behaviourally bisexual men in Vientiane, Laos, 2013-2014: Results from a qualitative study. *AMREP Early Career Researcher conference*; 2014 Sep 17; Melbourne, Australia.

Invited presentations

Bowring A. Mapping the sexual networks of behaviourally bisexual men in Vientiane, Laos: An ethical perspective. *ACFID Universities Network Symposium: Research ethics in vulnerable populations*; 2014 Oct 17; Melbourne, Australia.

Poster presentations

Bowring A, Pasomsouk N, van Gemert C, Hughes C, Toole M, Sychareun V, et al. Knowledge, attitudes and behaviour relating to sexual care among behaviourally bisexual men in Vientiane, Laos, 2013-2014: Results from a qualitative study. *18th IUSTI Asia-Pacific Conference*; 2014 Nov 11-14; Melbourne, Australia.

Bowring A, Pasomsouk N, van Gemert C, Hughes C, Toole M, Sychareun V, et al. Barriers and facilitators of health-care access among behaviourally bisexual men in Vientiane, Laos (WEPE358). *20th International AIDS Conference (AIDS 2014)*; 2014 Jul 20-25; Melbourne, Australia.

Bowring A, Pasomsouk N, Van Gemert C, Vongsaiya K, Hughes C, Sihavong A, et al. It goes both ways: buying and selling sex among behaviourally bisexual men in Vientiane, Laos (MOPE219). *20th International AIDS Conference (AIDS 2014)*; 2014 Jul 20-25; Melbourne, Australia.

Pasomsouk N, **Bowring A**, Sychareun V, Van Gemert C, Hughes C, Toole M, et al. Stigma and discrimination towards behaviourally bisexual men in Laos (TUPE265). *20th International AIDS Conference (AIDS 2014)*; 2014 Jul 20-25; Melbourne, Australia.

Bowring AL, Van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Phimphachan C, et al. A comparison of risk among non-identifying and self-identifying bisexual men in Vientiane, Laos, 2010. *11th International Congress on AIDS in Asia and the Pacific (ICAAP 11);* 2013 Nov 18-21; Bangkok, Thailand.

Reddel S, van Gemert C, Pham H, Nguyen V, Higgs P, Hughes C, **Bowring AL**, et al. Contrasting sexual orientation and sexual behaviour amongst bisexual men in sexual networks from Vientiane, Lao PDR and Hanoi, Vietnam. *The 13th International Union on Sexually Transmitted Infections World Congress (IUSTI)*; 2012 Oct 15-17; Melbourne, Australia.

Bowring A, Vella A, Degenhardt L, Hellard M, Lim M. Do opposites attract? Same-sex attraction and sexual partners among a community-based sample of young people. *The 13th International Union on Sexually Transmitted Infections World Congress (IUSTI)*; 2012 Oct 15-17; Melbourne, Australia.

Acronyms and abbreviations

AIDS	Acquired immune deficiency syndrome
AOR	Adjusted odds ratio
ART	Antiretroviral therapy
ASEAN	Association of South-East Asian Nations
BBM	Behaviourally bisexual men
CCM	Country Coordinating Mechanism
CCU	Consistent condom use
CHAS	Centre for HIV/AIDS/STIs
DIC	Drop-in centre
FGD	Focus group discussion
FSW	Female sex worker
HIV	Human Immunodeficiency Virus
IBBS	Integrated bio-behavioural survey
IDU	Injecting drug use
Lao PDR	Lao People's Democratic Republic (also abbreviated as Laos)
LaoPHA	Lao Positive Health Association
MSM	Men who have sex with men
MSMO	Men who have sex with men only
MSMW	Men who have sex with men and women
MSW	Male sex worker
MtF TG	Male-to-female transgender people (transgender women)
NAAT	Nucleic acid amplification test
NGO	Non-governmental organisation
NSAP	National Strategy and Action Plan
OR	Odds ratio
PCCA	Provincial Committee for the Control of AIDS
PEP	Post-exposure prophylaxis
POC	Point-of-care
PPP	Purchasing power parity
PrEP	Pre-exposure prophylaxis
PSI	Population Services International
PWID	People who inject drugs
RDS	Respondent driven sampling
STI	Sexually transmitted infection
TAP	Treatment as prevention
UAI	Unprotected anal intercourse
UK	United Kingdom
UNAIDS	Joint United Nations Programme on HIV/AIDS

US	United States (of America)
VCT	Voluntary counselling and testing
WHO	World Health Organization

Key terms

AIDS	Acquired immunodeficiency syndrome (AIDS) describes the clinical signs and symptoms of advanced HIV.
Antiretroviral therapy	Antiretroviral therapy (ART) refers to the treatment regimen used to treat HIV infection and usually involves a combination of three or more antiretroviral drugs.
Beer shop	(Also drink shop). Term used in Laos to describe a casual bar where food is also served. Women work as beer promoters in such shops for serving beer, food and making conversation with patrons and earn commission on sales (service women); they may also provide sexual services. Small beer shops (*haan noy*) are particularly known for providing sexual services.
Behaviourally bisexual men	Behaviourally bisexual men is used in this thesis to refer to men who have sex with men and/or male-to-female transgender people and women. The term refers to behaviour only and encompasses men with varying sexual identities. Behaviourally bisexual men are also referred to as men who have sex with men and women (MSMW), and for the purpose of brevity, are referred to as 'bisexual men' in most chapters after introduction of the term.
Condomless sex	Condomless sex became the preferred terminology for sex without a condom in 2014, replacing the terminology 'unprotected sex'. The change in language acknowledges that people minimise their risk in ways independent of condom use, particularly through pre-exposure prophylaxis or early initiation of ART. However, these risk reduction behaviours do not protect against other STIs. This thesis uses a mixture of terminology. Some chapters were written prior to the language change. Unprotected sex or unprotected anal intercourse (UAI) is also maintained when referring to existing literature because it reflects the terminology of reviewed papers, which were mostly undertaken before the shift in language. Where possible condomless is adopted in the introduction and discussion.
Country Coordinating Mechanism	The Global Fund established Country Coordinating Mechanisms (CCM) to fight AIDS, tuberculosis and malaria; they facilitate country-level partnerships for local ownership and participatory decision-making regarding grant proposals and implementation.

Haan sao bor li kaan	Lao term which literally translates as 'service shop' or 'shop for service women'. Refers to a shop offering sexual services or women who sell sex, but differs from a brothel.
Health promotion	According to the Ottawa Charter (1986), health promotion is '.....the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social wellbeing, an individual or group must be able to identify and to realise aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasising social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy lifestyles to wellbeing." Health promotion interventions seek to improve the health and wellbeing of individuals or populations.'[1]
HIV	Human immunodeficiency virus (HIV) is the virus that causes AIDS. Specifically, HIV is a retrovirus which infects CD4 T-cells of the immune system. As disease progresses, the number of HIV copies (viral load) increases, and the number of CD4 T-cells (CD4 count) decreases, which impairs the body's ability to fight off infection and disease.
Kathoey	Kathoey is short for *kathoey phom yao* (long-hair) or *kathoey teng ying* (short-hair) in Lao language and is the common term for male-to-female transgender people in Laos and Thailand, who are birth-assigned males but self-identify as female (or non-male), and may appear and act as female or male [2, 3]. The term kathoey may also be used as a catchall term to label someone who is sexually oriented towards men and may have derogatory connotations in some usages [4]. In this thesis kathoey is only used to define male-to-female transgender people. Alternative transliterations of kathoey are katoey and kathoy.
Key populations	Key populations are defined groups of people who, due to the commonality of higher-risk behaviours, are more likely to be exposed to HIV or to transmit it. Engaging key populations is critical to the HIV response. In most settings, key populations includes men who have sex with men, transgender people, people who inject drugs, sex workers, people living with HIV, and seronegative partners in serodiscordant couples [5].

Men who have sex with men	Men who have sex with men (MSM) is an umbrella term based on behavioural categorisation and used to describe males who have sex with males, irrespective of sexual identity, association with any community, and motivation for sex with males. Men with bisexual behaviour are a sub-group of men who have sex with men.
Men who have sex with men and women	Men who have sex with women (MSMW) is another way of describing behaviourally bisexual men. See *behaviourally bisexual men*.
Men who have sex with men only	Men who have sex with men only (MSMO) describes men with homosexual behaviour, irrespective of sexual identity or attraction.
Phu sai tae	Lao term which literally translates as 'real man', and denotes a man who self-identifies as 'straight'.
Service women	In Laos, the term service women is often used interchangeably with female sex workers but is specifically used to describe women working in drink shops, bars, and other entertainment establishments at which men seek access to women for purposes of commercial sex [6].
Sexual/romantic attraction	"Attraction toward one sex or the desire to have sexual relations or to be in a primary loving, sexual relationship with one or both sexes" [7].
Sexual health	The World Health Organization's working definition for sexual health is: '…a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled.'[8]
Sexual identity	The labels and terms used by an individual to describe their sexual orientation, which can be influenced by culture and community. Examples of sexual identity include gay, homosexual, bisexual, straight, lesbian, heterosexual and queer.
Sexual orientation	Sexual orientation refers to an individual's sexual and romantic disposition to the same and/or opposite gender. It encompasses attraction (emotional and physical), identity and behaviour.

Sexually transmitted infection	Sexually transmitted infections (STIs) are infections that are spread from person to person by the transfer of organisms during sexual contact. STIs include bacterial (e.g. *Chlamydia trachomatis* [chlamydia], *Neisseria gonorrhoeae* [gonorrhoea], *Treponema pallidum* [syphilis]), viral (e.g. HIV, human papillomavirus [HPV], herpes simplex virus) and parasitic (e.g. *Trichomonas vaginalis* [trichomoniasis]) infections. Given that STIs may be asymptomatic, this term is preferred to 'sexually transmitted diseases'.
Transactional sex	The exchange of sex for money, goods, favours, or material support [9]. Transactional sex includes sex work but also encompasses less formal exchanges.
Transgender	Transgender is an umbrella term for people whose gender identity and expression differs from their sex assigned at birth. It includes people who are transsexual, transgender, or otherwise gender non-conforming. Transgender people may self-identify as transgender, female, male, transwoman or transman, transsexual, or cultural-specific identities such as *kathoey* (Laos and Thailand) [5]. Male-to-female transgender (transgender women) refers to biological males who identify as female. It is increasingly expected that transgender people be considered separate to men who have sex with men in recognition of the specific health and social needs, circumstances, and vulnerability of transgender people [10].
Treatment for prevention	Treatment as prevention (TAP) refers to the administration of antiretroviral therapy for the benefit of reducing viral load and preventing transmission of HIV. It often refers to early treatment where there might not be additional clinical benefit to the individual, but recent research also demonstrated that early treatment also improves patient outcomes [11].

Chapter One

1 . Introduction

Asia bears a high burden of disease relating to human immunodeficiency virus (HIV), and men who have sex with men (MSM) are disproportionately affected. MSM constitute a heterogeneous group of men, diverse in identity, sexual practices, and attraction. Understanding subgroups of MSM is important to explain transmission dynamics and inform HIV interventions matched to their needs. The research presented in this thesis focuses on MSM in Lao People's Democratic Republic (Lao PDR, here in referred to as Laos), and specifically men with bisexual behaviour. Behaviourally bisexual men constitute a substantial proportion of MSM in Laos and more broadly in Asia. Their involvement in HIV interventions is essential to achieving HIV control and maintaining low prevalence in Laos. Using a mixed-methods approach, research was undertaken to explore and describe characteristics, risk context, and health needs of bisexual men in Laos. This information will inform the implementation of inclusive and targeted HIV interventions.

This chapter provides the background and rationale for the research presented in this thesis and a review of the literature relating to HIV and MSM in Asia. First, the epidemiology of HIV in Asia is described with a focus on MSM. Second, the meaning and classification of sexual orientation is described and the sexual practice and identity of MSM and transgender women in Asia is reviewed. Third, the contextual background of Laos is developed, providing an overview of population, historical, social, and governance factors. The available data on HIV in Laos are reviewed, including both biological and behavioural factors. A focus on MSM in Laos is maintained, delving into the context of sexual identity and sexual practices. Fourth, three different approaches to HIV prevention among MSM and the current guidelines for HIV prevention are described. Fifth, an overview of behaviour change theory guiding health promotion is provided. Finally, the rationale for the research is stated and its aims, methodology and outline are presented.

1.1 HIV in Asia

1.1.1 Overview of epidemiology of HIV in Asia

Most of Asia is characterised as having a low-level HIV epidemic, with national HIV prevalence of <1% in all countries bar Thailand [12]. However, given the region's populous nations, the absolute number of people living with HIV is high; in 2012 it was estimated that there were approximately 4.6 million people living with HIV in Asia [12], and Asia bears the highest burden of disease outside of Sub-Saharan Africa.

Across Asia HIV is most commonly transmitted through commercial sex, injecting drug use (IDU), and unprotected anal intercourse (UAI), and HIV is concentrated in three key populations who engage in these risk behaviours: sex workers, people who inject drugs (PWID), and MSM [13, 14]. Despite previous concerns that the HIV epidemic in Asia would reach the generalised proportions seen in sub-Saharan Africa due to sexual transmission between key populations and their sexual partners [15], this has not transpired. Although a substantial proportion of women in Asia are infected through their intimate partners [16, 17], ongoing non-commercial heterosexual transmission is curbed by low-risk behaviour among most women in Asia [15, 18].

From a regional perspective, the HIV epidemic has remained largely stable in Asia, and new HIV infections reduced by 20% from 2001 to 2009 [19]. However, these gains have not been distributed equally; there are considerable differences in epidemic patterns between subregions, countries and populations. In China, for example, six of 31 provinces account for the majority of HIV infections [20], and between 2005 and 2010, HIV prevalence decreased or remained stable among PWID but increased among MSM; hence male-to-male sex has surpassed IDU as the main mode of transmission [20]. Thailand and Cambodia are two examples where HIV infections rates dramatically reduced in response to strong leadership and HIV prevention programming among people who buy and sell sex [19, 21], but increases in infection among MSM were recorded over the same period [22, 23]. Increased investment in HIV prevention, research and surveillance among MSM is essential to realising HIV prevention targets in Asia [10, 22, 24].

1.1.2 HIV and STI risk among MSM in Asia

In Asia, MSM have 18.7 times greater odds of HIV infection than the general population [25]. Exceptionally high HIV prevalences among MSM have been reported in urban areas of Thailand (20–31%) [23, 26, 27], Cambodia (9–14%) [28, 29], Vietnam (5–20%) [30], Myanmar (10–35.0%) [31, 32] and China (11–17% in Chongqing) [33]. HIV incidence among MSM in Asia ranges from 0.7–15.0 per 100 person-years [13].

MSM have been largely neglected in national responses to HIV and surveillance in Asia until recently [22, 25, 34]. MSM accounted for zero to four per cent of national spending on HIV in 2004 [35], despite projections that MSM will account for up to 50% of new HIV infections in Asia by 2020 [19]. In some settings HIV prevalence has increased relatively unchecked among MSM [20], defying gains made among female sex workers (FSWs) and the general population [19, 32, 36]; most notably, in Thailand the first prevalence study among MSM found prevalence of 17.3% in 2003 [37]. Prevalences

increased to 28.3% in 2005 [38] and 30.8% in 2007 [23]. Upward trajectories have also been reported in China (0.6% in 2003 to 7.4% in 2009) [39] and the Philippines (zero in 2005 to 11.8% in 2009 among MSM in Manila) [40].

Elevated risk among MSM in Asia is generally due to condomless sex, although some MSM engage in dual risk behaviours such as male-to-male sex and IDU [41]. Rates of unprotected (condomless) anal sex in the past six months range from 26% to 78% among MSM across the Greater Mekong region [14], and similar trends exist across Asia [42]. Anal sex poses substantially higher probability of acquiring HIV from an infected individual than vaginal sex, with risk of infection through receptive anal sex estimated at 138 per 10,000 exposures compared to 4 per 10,000 exposures for vaginal sex [43]. However, some studies in Asia have reported low knowledge of the risks of HIV transmission through anal sex, including situations where men perceive anal sex to be lower risk than vaginal sex [42, 44-46].

Other sexual risk behaviours commonly reported by MSM in Asia are multiple sex partners and buying and selling sex [14, 42]. For example, in a clinical cohort in Thailand 40% of MSM reported six or more sex partners in the previous four months [27]; in Bangalore, 31% of MSM reported buying sex from a male sex worker, 16% reported buying sex from a transgender sex worker, and 41% reported selling sex to a man [47]; in Laos 22% of MSM reported selling sex and 28% reported buying sex in the previous three months [48]; in Chengdu, China, 18% of MSM reported selling sex to men, and 10% had bought sex from men [49]; and among MSM and transgender women in Thailand, 50.4% reported ever selling sex [50]. Studies assessing predictors of HIV positivity among MSM in Asia have found that multiple male sex partners [29, 51-53], receptive anal sex [37, 40, 45], sex with a FSW [29, 41], concurrent STI infection [27, 29, 51, 53-56], inconsistent condom use when selling sex [52, 55], drug use [27, 51, 55] and IDU [41, 52] are associated with HIV infection.

Given the shared route of transmission with HIV, it is unsurprising that other STIs such as syphilis, gonorrhoea and chlamydia are prevalent among MSM in Asia [14, 42]. For example, lifetime syphilis infection has been detected among 15.8% of *kothi* MSM in India [57], 18% of MSM in Taiwan [54], and overall prevalence is estimated to be 11.2% among MSM in China [33]; current syphilis has been detected among 3.8% of MSM in Guangzhou [58] and 9.9% in Beijing [59]. Among MSM in Indonesia the prevalence of rectal chlamydia and gonorrhoea was 20.9% and 18.6% respectively in 2007 [51]. These statistics demonstrate a high burden of STIs among MSM in Asia, are indicative of behavioural risk, and have implications for the transmissibility of HIV. Untreated STIs increase both susceptibility to and infectiousness of HIV infection due to complex immunological mechanisms [60-64]. Although there is compelling biological and epidemiological evidence that STIs mediate the risk of HIV, the evidence is less conclusive on whether STI management effectively mitigates this risk [65].

Low uptake of HIV testing among MSM in many Asian settings means high rates of undiagnosed HIV infection contribute to ongoing transmission. Testing rates as low as 0% (Jinan, China) [66], 3% (Indonesia and Vietnam) [56, 67], and 6% (Luang Prabang, Laos) [48] for lifetime HIV testing are reported in some settings. In other settings the proportion testing is higher but still indicates that at least half of MSM have never been tested; for example, 44% of MSM in Bangalore, India reported a

previous HIV test [47]. In Bangkok, studies utilising self-report data found that 21%–52% of MSM had ever been tested for HIV [26, 27, 38, 68], while (based on data from 91 testing sites) an estimated 23% of MSM at high risk tested for HIV in 2011 in Bangkok [69]. In China there is some evidence of lifetime HIV testing increasing, from 24% prior to 2007 to 47% from 2007–2012 [70], but rates are still considerably below current targets [24].

The criminalisation and stigmatisation of male-to-male sex in many Asian settings increases vulnerability to HIV by limiting access to condoms, HIV testing and prevention services, and discouraging disclosure of behaviour [22, 71-73]. Male-to-male sex is criminalised in 11 countries in Asia, including Afghanistan, Bangladesh, Bhutan, Brunei, India, Iran, Malaysia, Maldives, Myanmar, Singapore, and Sri Lanka [74, 75]. Stigma and discrimination can cause anxiety, depression and suicidal ideation in MSM [74, 75].

There are little data on coverage of HIV prevention responses among MSM in Asia. Coverage is thought to be lowest in South and South-East Asia (weighted mean 26%) compared to global regional estimates [32, 76]. Coverage of antiretroviral therapy (ART) varies throughout Asia. In 2011, 47% of people eligible for ART were receiving it in South and South-East Asia, and 38% of people in China. Late initiation of ART is common in Asia, and half of people start ART with a CD4 count <200 cell/µL, signifying advanced HIV [77]. Data on ART coverage specific to MSM are not readily available, but stigma and discrimination are significant barriers to access to HIV treatment worldwide [78]. In China, nondisclosure of HIV status, misconceptions about the benefits of treatment, and perceived costs are barriers to treatment among MSM [79].

As discussed in section 1.2.4, MSM in Asia associate with varied sexual identities. In both global and Asian settings there is concern that non-gay-identifying or behaviourally bisexual MSM have reduced access to HIV prevention interventions and clinical services and are more likely to have late presentation[1] for HIV [10, 42, 78, 81-83]. For example, in Vietnam non-gay identified MSM had 42% less likelihood of previous HIV testing than gay-identified MSM [84], while a study in China found that gay-identified MSM had 3.38 times greater odds of ever testing for HIV than heterosexual- and bisexual-identified MSM [85].

[1] Late presentation for HIV is defined as first presenting for care when CD4 cell count is <350 cell/µL or presenting with an AIDS-defining event. Late presentation is associated with poorer patient outcomes [80].

1.2 Understanding sexual orientation in Asia

This section provides background on the classification and constructs of sexual orientation in order to contextualise bisexuality broadly as well as how it is applied in this piece of work. Although this work does not attempt to develop the theoretical or sociological framing of male sexuality in Laos, the context of sexual risk in relation to identity is a key focus, and a broad understanding of sexual orientation, gender identity and the barriers to accurately measuring these concepts is essential.

1.2.1 Sexual orientation

Sexual orientation refers to an individual's sexual and romantic disposition to the same and/or opposite-sex. It is generally seen to encompass three dimensions: attraction, identity and behaviour [7, 86]. These may be measured by physical, emotional and cognitive feelings such as sexual attraction, physiological arousal, romantic relationships, sexual fantasies and sexual identity, as well as sexual behaviour [87, 88].

Sexual identity is a specific concept embedded in sexual orientation. It refers to the personally selected labels or terms used by an individual to describe their sexuality, which are influenced by community and culture [7]. Common terms used to describe sexual identity include gay, lesbian, homosexual, straight, bisexual, heterosexual and queer. However, this list is not exhaustive, individuals may purposefully reject labelling their sexual identity and there is a lack of cultural consensus on these labels [88]. Different cultures often have specific local terms used to convey sexual identity, as discussed in section **Error! Reference source not found.**.

For reasons of either pragmatism or theory, sexual orientation is often described by discrete categories: homosexual (preference for same-sex partner), heterosexual (preference for opposite-sex partner) and bisexual (preference for both same-sex and opposite-sex partners) [88, 89]. Alternatively, some research suggests that sexual orientation exists on a continuum with degrees of non-exclusive attraction or behaviour towards the same and opposite-sex [88, 90-93]. Other research emphasises that sexual orientation can be fluid over time and social contexts, especially among females [89, 94-97].

Although attraction, identity and behaviour collectively define sexual orientation and often overlap, research indicates that the constructs of sexual orientation may act independently and thus may not always distinguish someone's sexual orientation in the same way; attraction, fantasy, romantic inclinations and actual sexual experience may be interrelated but not necessarily concordant [86, 88]. For example, a man may be predominantly attracted towards women but have sex with men, or a man may have sexual fantasies about men but currently only be romantically involved with women. The timing of different indicators may also lag, such as if romantic attraction or fantasy develops before someone's actual sexual experience. Similarly, discordance between sexual identity and other dimensions of sexual orientation is well-documented globally, particularly among individuals with a sexual orientation characterised by non-exclusivity (sex or attraction to people of the same-sex and opposite-sex) [41, 82, 88, 98-101]. Discordance between sexual experience with the same-sex and self-identity may be influenced by cultural and social norms and stigmatisation [102, 103]; some research

suggests that discordant identity and behaviour among MSM is more common among minority ethnic and racial groups, potentially due to more conservative cultural values around homosexuality [82, 104, 105].

There is a lack of consensus on how best to measure and classify sexual orientation, making it difficult to compare studies and accurately assess prevalence of homosexuality [7, 93, 106]. Researchers often base measurements off a single construct (attraction, behaviour or identity) [93]. In practice, this is often identity, though in HIV research sexual behaviour is often the preferred indicator due to its association with HIV risk [7], while some research suggests that sexual attraction may be the most reliable single predictor of sexual orientation [88]. It is not always made clear which constructs have been used to define sexual orientation, and confusingly, the same terms (homosexual, heterosexual, bisexual) are generally used to define behaviour, identity, and overall sexual orientation.

Kinsey scale

Potentially the most notable of scales of sexual orientation is the Kinsey scale, first described by Alfred Kinsey and his colleagues in 1948 [90]. The Kinsey scale grades sexuality from 0 (exclusively heterosexual) to 6 (exclusively homosexual) (**Table 1**). It attempts to take into account a mixture of sexual attraction or arousal ('psychosexual reactions') and behaviour ('overt sexual experience') [87]. While the Kinsey scale places sexual orientation along a 7-point scale, in practice it is often interpreted and used as a categorical measure, either grouping non-exclusive ratings as bisexual or grouping bisexual and homosexual categorisations and reverting to a dichotomous scale [91, 95, 107].

Table 1 The Kinsey Scale of sexual orientation

0	1	2	3	4	5	6
Exclusively heterosexual	Predominantly heterosexual and only incidentally homosexual	Predominantly heterosexual and more than incidentally homosexual	Equally heterosexual and homosexual; bisexual	Predominantly homosexual and more than incidentally heterosexual	Predominantly homosexual and only incidentally heterosexual	Exclusively homosexual

Source: [90]

There are numerous critiques of the Kinsey Scale. There are particular concerns about the representativeness of the sample and sampling bias; for example, the analysed sample was based exclusively on white American males [90, 108]. The scale is also criticised for obscuring differences between behaviour and attraction, placing homosexuality and heterosexuality on a single continuum forcing one to trade-off the other, quantifying sexuality, and being difficult to assign ratings or respond to [87, 95]. Other important limitations of the Kinsey Scale are evident from qualitative research with sexual minorities: the Kinsey Scale does not accurately reflect the experiences and sexuality of individuals who are asexual, transgender, pansexual or queer; it conceptualises sex as binary and does not account for gender variance of self or partners; and it does not account for the fluidity of sexuality over time [95]. The Kinsey Scale is also criticised for positioning bisexuality as the midpoint between homosexuality and heterosexuality rather than a separate entity. This may be interpreted as delegitimising bisexuality and devaluing bisexuals who are not equally attracted to both genders [95].

Although these limitations have spurred the development of other scales of sexual orientation [e.g. 91], Kinsey's original model remains highly influential in sexuality research.

Bisexuality

As with homosexual and heterosexual, the term bisexual can have several meanings and is applied in different ways. As a behaviour (behaviourally bisexual), bisexual describes consensual sexual experience with more than one gender. Bisexual also applies to sexual attraction towards males and females [109]. Bisexual can also refer to an identity [109]. The Kinsey Scale describes bisexuality as a sexual orientation with equal attraction or preference for both sexes [90], while other researchers consider any orientation which is not exclusively heterosexual or homosexual to be bisexual [107] or argue that for bisexual people the gender of partners is immaterial [96]. Models of sexual orientation often stipulate that bisexuality exists on a continuum between homosexuality and heterosexuality, rather than being its own entity, and fail to distinguish between bisexuality and pansexual, queer or fluid orientations [110].

In the work contained in this thesis, sexual orientation is generally considered by its individual constructs in order to emphasise the discordance between identity, behaviour and attraction among this group of men in Laos. Unless indicated, bisexuality (bisexual men) is used to describe behaviour; that is, sexual experience with male (or transgender women) and female partners. In certain sections emphasis is given to sexual identity, and in Chapter 3, sexual orientation is captured through the Kinsey Scale and a dual measure of identity and behaviour described. Sexual attraction and personally and culturally relevant terms for sexual identity are explored in qualitative work but are not consolidated into an overarching measure of sexual orientation.

1.2.2 Gender identity

The word *sex* defines males and females based on biological and physiological status, whereas *gender* refers to a social construct of women (girls) and men (boys). *Gender identity* is the gender that an individual identifies with, regardless of their biological sex. *Transgender* is used to describe people whose gender identity and expression does not conform to the sex assigned to them at birth [5]. For example, a male-to-female transgender person is assigned male sex at birth and identifies as female. Transgender people may identify as transgender, transsexual, male, female, transman, transwomen, or a culturally-specific term such as *kathoey* (Laos, Thailand). Although sex and gender are often referred to as binary concepts (male/female), sex includes intersex variations, and gender identity incorporates genderqueer, androgynous, and bi-gendered identities [111].

Gender identity is distinct from sexual orientation, although it may interact and frame sexual orientation is some sexual minorities [86, 110]. Gender expression or gender-typical roles during sexual behaviour (insertive or receptive during anal sex) can influence understanding of sexual orientation, sometimes blurring the distinctions between gender, gender role and sexual orientation. This has particularly been reported in Asian, Pacific and Latino cultures [42, 86, 112]; for example, in some cultures the practice of insertive anal sex with men is associated with heterosexuality. Indeed, in Thai language a single word (phêet) is used to describe sex, gender and sexuality, without

differentiating between these concepts [113]. In addition, the position of gender in sexual orientation is often unclear. A transgender person may describe their sexual orientation differently depending on whether they base their response on their biological sex or gender identity [112]. The inadequacy of the Kinsey Scale to account for gender variance has been previously discussed [95].

Given the distinction between sexual and gender identity, there is strong impetus to consider transgender people uniquely from MSM. Further, transgender people and MSM have differing behaviours, social context and health needs [10, 114, 115]. However, in practice many existing studies and reports in Asia and Laos have reported on transgender as a subgroup of MSM or collectively. In the following sections, the literature of the sexual practices and identity of MSM and transgender people in Asia are reviewed together.

1.2.3 Defining MSM

The epidemiological term 'MSM' denotes men who have sex with other men, irrespective of sexual identity, motivation for having sex with men, or whether they have sex with women [10, 116]. As such, MSM describes a diverse group of men with varying sexual practices and orientation, including men who are non-gay-identified and married men. The term was coined to place the emphasis on behaviour rather than identity, which cannot be universally categorised and varies between individuals, populations, and contexts [10, 116]. Further, from an epidemiological perspective it is sexual behaviour, particularly engagement in anal sex, rather than identity which is most directly related to elevated risk of HIV and sexually transmitted infections (STIs) among MSM. Despite this, the term MSM can be problematic due to obscuring the diversity of behaviour, sexual expression and risk-related activity patterns, and can lead to sub-groups of MSM being overlooked in HIV prevention programs and research [10, 42, 117]. While recognising its shortcomings, the term 'men who have sex with men' or MSM is applied throughout this thesis given that MSM in Asia associate with diverse identities (see section 1.2.4).

1.2.4 Sexual practices and identity of MSM and transgender women in Asia

It is estimated that 6-12% of men in South and South-East Asia and 4% of men in East Asia report sex with men at least once in their lifetime [118]. In South Asia, a similar proportion of men report same-sex behaviour in the past year as in their lifetime, while in South-East Asia, 4% report same-sex behaviour in the past year [118].

In Asia, sexuality is often defined through gender expression and sexual roles, thus gender identity is closely tied with sexual orientation [42]. Local terms for sexual and gender variance incorporate these roles to describe subgroups of MSM and transgender women and are similar across societies. Recognised subgroups include masculine-acting MSM who are predominantly insertive partners (*pros saat* in Cambodia, *panthis* in India, *bong king* in Vietnam, *phu sai tem tua* in Thailand), and effeminate MSM who are predominantly receptive partners (*kothis* in India) [10, 42, 101, 119]. However, these terms are by no means definitive nor describe all MSM in Asia. Some of these terms are more commonly used as labels rather than self-prescribed identities. Further, sexuality can be fluid and change over circumstances and time [42]. In addition to MSM there are analogous groups of male-

to-female transgender people throughout Asia (*Hijras* in India, *kathoey* in Thailand and Laos, *waria* in Indonesia, *sray sros* in Cambodia, *bong lo* in Vietnam).

In Asia, many MSM do not self-identify as gay, homosexual or their local equivalents. For example, in a Thai study 58% of men who have sex with men and women identified as heterosexual [55], while in a Vietnamese study, 18% of MSM were non-gay-identified [84]. Heterosexual or 'straight'-identifying men may have sex with men due to opportunity, experimentation, financial gain, or attraction [42]. Due to the emphasis on gender roles, masculine men engaging in insertive sex with feminine male partners might not consider this to be at odds with their heterosexuality [42]. Sub-groups of MSM are frequently referred to as being 'hidden' and may have reduced access to HIV services and outreach due to non-identity, stigma and discrimination [42, 47, 51].

It is common for MSM in Asia to report sex with women [14]. For instance, in Thailand, 15% of MSM and 43% of male sex workers reported sex with women in the previous three months [120]; in a large sample of MSM in India 42% of MSM were currently married and 51% reported sex with women in the previous three months [121]; in Cambodia 40% of MSM reported sex with women in the previous year [28]; and in a meta-analysis of studies in China, 17% of MSM were currently married and 26% reported female sex partners in the previous six months [122]. Some MSM have sex with women in order to meet social and cultural expectations to marry and have children [10, 123, 124].

1.3 Context of HIV in Laos

1.3.1 Country overview

The research presented in this thesis is primarily focused on Laos. This section develops an overview of the country context, including the geographical, cultural, political and health setting. These factors can have important implications for health and health responses, and where possible, these links are inferred. Knowledge of national context also provides a basis for discussing the transferability of study findings.

Population and geographical setting

Laos is a small lower-middle income country located in the Greater Mekong Subregion of South-East Asia [125]. Landlocked, Laos covers 236,800 km^2 and borders Thailand, Vietnam, Cambodia, Myanmar, and China (Figure 1). The terrain of Laos is predominantly mountainous, but the four major urban centres – Vientiane Capital, Luang Prabang, Savannakhet, and Pakse – are located in the low-lying Mekong Valley. The country is divided into 18 provinces, including Vientiane Capital, which contains the municipality of the capital city Vientiane. Administratively, provinces are divided into districts and villages.

The population of Laos is approximately 6.8 million (2013), of which 36% live in urban areas [125]. Laos has a young population: 47% are aged under 20 years [126]. This leads to a high dependency ratio, with 64 dependents (persons aged <15 and >=65) per 100 people of working age [125]. Major sociodemographic, economic and health indicators are provided in Table 2.

Table 2 Overview of national indicators for Laos

Indicator	Estimated value
Total population (2013)	6,769,727
Age dependency ratio (% of working age population)	63.8%
Life expectancy at birth (years)	68.3
Population living in urban areas (2013)	36.5%
Gross national income per capita (PPP, current international $)	4351
Infant mortality rate (per 1000 live births)	53.8
Maternity mortality ratio (deaths per 100,000 live births)	470
Population below poverty line	34%
Adult literacy	72.7%
Mean years of schooling (ye	4.6

PPP: purchasing power parity
Source: [125, 127]

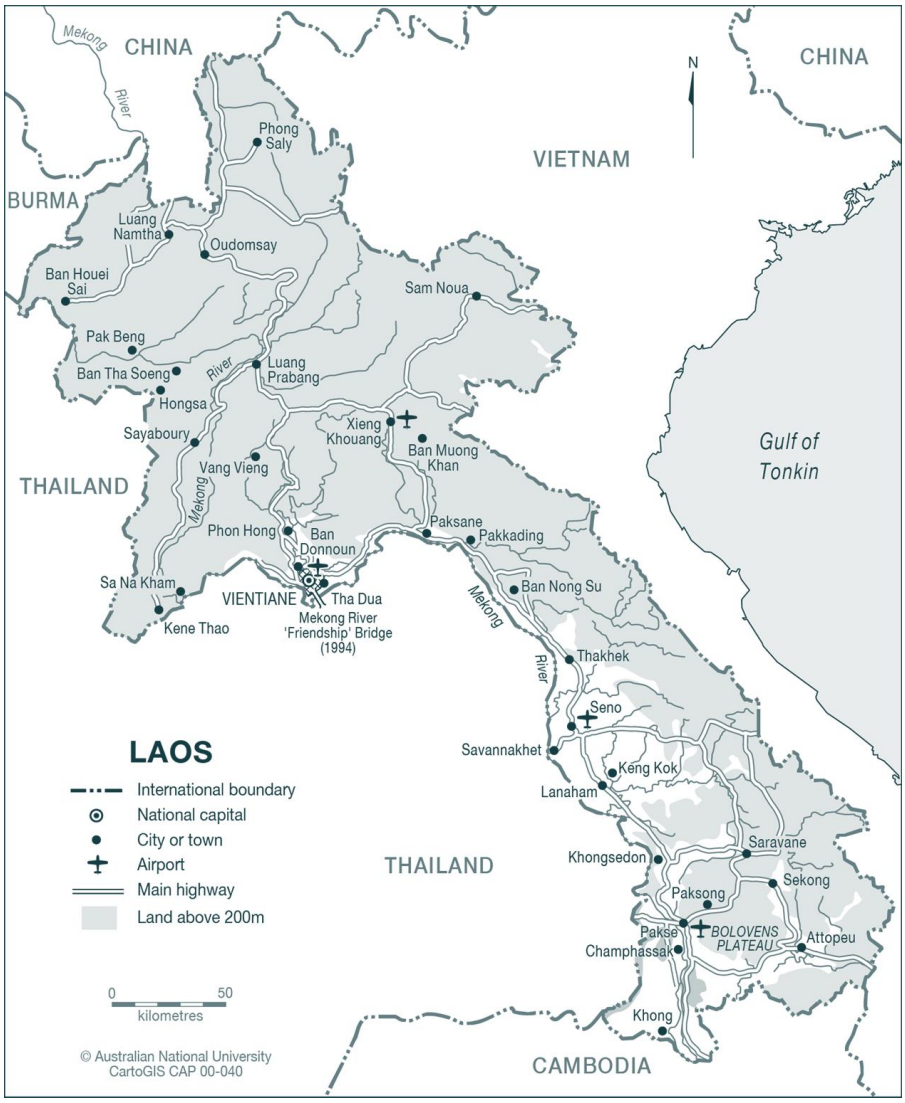
Cultural and religious context

The major religion in Laos is Theravada Buddhism, followed by approximately 60% of the population. Animism is also widely practised, and many people commonly observe a mixture of Buddhist and animist practices. The population is ethnically diverse, and there are 49 officially recognised ethnic groups with distinct cultures, languages and traditions [128]. The largest group, the Tai-Lao, account for 55% of the population, thus nearly half of the population is made up of various ethnic minorities. The four major ethno-linguistic groups are the Tai-Kadai (including Lao, Tai Dam, and Tai Deng); Hmong-Yao (including Hmong and Yao Mien); Austroasiatic (including Mon-Khmer); and Sino-Tibetan (including Akha and Lahu) [128].

Recent historical background

The recent history of Laos is characterised by civil war, political instability and displacement. From 1893 to 1954, Laos was under French rule as part of its Indochinese territories. When Laos gained independence in 1954, civil war broke out between the royalists and the communist group, the Pathet Lao, and continued for 20 years. Mass movements of people increased as the war gained traction [129]. From 1964 to 1973, Laos became the unsanctioned frontline of the Vietnam War, through which it became the most heavily bombed country, per capita, in the history of the world [130, 131]. The contamination of land with unexploded ordnance has lasting impact on development, threatening physical safety, land use, food security and livelihoods [130, 132]. In 1975, the Pathet Lao defeated the Royalist army and established the Lao PDR.

Figure 1 Map of Laos.



Map courtesy of CartoGIS, College of Asia and the Pacific, The Australian National University [133]

Political profile and governance

Since 1975, the Lao People's Revolutionary Party have led the nation as an authoritarian one-party state [134]. The political structure is typical of communist parties and includes a head of state (president), nine-member Politburo, and the Central Committee, who exercise control through the National Assembly [135]. The head of government, the prime minister, is appointed by the Party, and the Party both controls and infiltrates the government, bureaucracy, mass organisations and the military [134]. Although proclaimed a Marxist-Leninist state, in practice Lao remains communist only in terms of one-party rule, with a relatively free market economy [134].

The Government of Laos states it promotes accountable development through engagement with communities, civil society and the private sector [136]. However, constraints on governance remain, as outlined in the United Nations Country Analysis Report [137]. While freedom of speech is written into the constitution, individual freedoms may be seen as a threat to peace and stability, and political dissent is discouraged [134, 135, 137]. Governance is characterised by top-down decision-making and

transparency is lacking [134]. This is an impairment to participatory planning and development, such as the meaningful involvement of key populations in decision-making and program implementation, which is central to effective HIV responses [5]. Laws and regulations are inconsistently enforced due to lack of qualified personnel and poor communication and information sharing between central and district levels and the civil service. Performance and efficiency is impeded by redundant rules and procedures, corruption is common, and media remains heavily controlled in Laos [132, 137].

Civil society is limited in Laos, and health interventions have traditionally been implemented by the government, government-backed organisations, or a few international non-governmental organisations (NGOs) [138]. However, in 2009 Laos approved a decree for Lao non-profit associations to form and operate independently [139]. This has enabled the establishment of organisations such as Lao Positive Health Association (LaoPHA, previously Lao Youth Action for AIDS Programme), which works to promote the role of key affected populations in community-based responses to HIV in Laos. The operation of international NGOs in Laos remains highly regulated by the government, requiring time-consuming and multiple approvals and Memoranda of Understanding [138].

Economic overview

Economic reforms adopted in the mid-1980s instigated gradual economic growth in Laos by decentralising control of the economy and encouraging private enterprise [140]; in 1991, Laos fully transitioned to a market-based economy. These reforms paved the way for international trade, investment and cooperation [141]. Regional integration and trade has also been strengthened by Laos' admittance into the Association of South-East Asian Nations (ASEAN) in 1997 [140].

The Lao economy has historically relied on subsistence agriculture, but there is growing contribution from industry and services, particularly manufacturing, mining, forestry, and hydropower [135, 140]. Increasing foreign investment in these sectors is driving rapid economic growth in Laos and stimulating investment in infrastructure. Since 2006, the gross national income has almost doubled from 2550 purchasing power parity (PPP) per capita to 4550 PPP per capita in 2013 (current international $), and annual growth in gross domestic product has maintained 8–8.5% since 2010 [125]. However, Laos remains heavily reliant on foreign investment for development and infrastructure [12, 125].

Although there are some examples of economic growth increasing investment in health, such as the allocation of revenue from the Nam Theun 2 hydropower project to the Ministry of Health, there have been minimal changes to government health spending over these periods of growth [142]: public health expenditure as a percentage of government expenditure was 4.1% in 2005 compared to 3.5% in 2013 [125]. The Lao government has pledged to increase public health funding to 9% of the state budget, but the time frame to meet this commitment is unclear [142].

Health and social indicators

Despite economic growth and being on track to achieving Millennium Development Goals [143], Laos remains one of the poorest nations in the world. It ranks 139 out of 187 countries and territories on the

Human Development Index (range 0-1; Laos = 0.569), a composite measure based on indicators of health, education, and standard of living [144], and 30% of the population live below the global poverty line (living on less than $1.25 a day at 2005 international prices, adjusted for PPP; 2012) [125].

Over the past 25 years Laos has seen dramatic health and social advances. For example, between 1990 and 2013, life expectancy at birth increased from 54 to 68, primary school enrolment increased from 65% to 97%, infant mortality rate decreased from 110.9 to 53.8 per 1000 live births, and under–5 mortality decreased from 162.0 to 71.4 per 1000 live births [125]. Despite these relative improvements, the absolute values of these indicators portray a critical health scenario. Rates of chronic malnutrition are alarmingly high: nationally, 44% of children under five are moderately stunted and 19% are severely stunted; seven per cent are moderately or severely wasted [126]. The maternal mortality rate in Laos remains one of the highest in the region, estimated at 360 deaths per 100,000 live births in 2012 [125]. Individual vaccination rates are high, but less than half of all children have received all vaccinations [126]. The leading causes of children's deaths include the vaccine-preventable diseases measles and meningitis as well as neonatal causes and malaria, acute respiratory infections, diarrhoea and dengue fever [143]. Poor indicators of child and maternal health are indicative of insufficient access to health services, including antenatal care, skilled birth attendance and immunisation, due to inadequate infrastructure, a weak health system and discrepancies in women's education and household income [126, 137].

Within Laos, there are stark contrasts between water, sanitation, health and education indicators between rural and urban areas and between ethnic groups [126]. In 2012, 51% of the rural population had access to improved sanitation facilities compared to 90% of the urban population, and 65% of the rural population had access to improved water sources compared to 84% of the urban population [125]. Literacy rates are similar for young women (91%) and young men (92%) living in urban areas, but fall to only 60% among young women living in rural areas, 43–81% among young men from ethnic minorities, and only 30–45% among young women from ethnic minorities [126]. In 2011, 14% of women in urban areas had no access to antenatal care, compared to 48% and 80% in rural areas for those with and without road access, respectively [126]. Most health and social indicators reflect these disparities. Rural poverty is compounded by inequality in land tenure, low farm productivity, the privatisation of land for foreign direct investment, and threat of unexploded ordnance in rural areas [137].

With the increased exploitation of natural resources through mining, hydropower and forest plantations, there are growing concerns about the social and environmental implications for ecosystems and rural livelihoods [137]. Illegal logging, deforestation and loss of biodiversity are major issues related to unregulated development for commercial use and expanded subsistence agriculture [145].

Population mobility and migration

Following transition to a Communist state in 1975, there were mass displacements of people from Laos, particularly to Thailand, France, and the United States (US) [129]. Many of the educated elite

and the Hmong people, who were recruited as covert allies to US operations during the war, fled as refugees or were imprisoned in re-education camps [135]. As such, Laos is one of the countries most affected by so-called 'brain drain' [146], and lack of skilled workers remains a prominent issue in the Lao healthcare system [147].

Modern migration patterns include substantial movement within, to and from Laos, and both documented and undocumented migration. Lao borders are long and porous, with unemployment, poverty, and prospect of economic opportunities and low-skilled labour driving movement [148]. Informal cross-border trade is also common [132]. Laos increasingly encourages the term 'land-linked' over 'land locked' in light of improved transportation networks and overland routes linking its regional neighbours [132].

Migrants from Laos primarily settle in Thailand, or less commonly Malaysia or China, and work in agriculture, infrastructure and the domestic sectors [132, 148, 149]. Thailand attracts large numbers of migrants from Laos, Cambodia and Myanmar, contributing to its estimated total of 2.5 million combined documented and undocumented migrants [150]. Migrants from Laos account for 12% of registered migrants and dependents in Thailand [148]. Although the majority of Lao people migrating to Thailand work in the agricultural sector, Lao migrants also work as sex workers in Thailand and border areas [150]. Lao male-to-female transgender people and gay men migrate to areas such as Pattaya in Thailand to work at gay bars and sell sex [151]. Importantly, studies suggest that migrants in Thailand have lower access to HIV prevention programs than Thai nationals [150, 152]. Population moments between Laos and neighbouring countries have posed fears of rise in HIV infections given the more established HIV epidemics in Thailand, China, Cambodia and Myanmar [153].

The shift from agriculture to a market economy in Laos has been a driver of rural to urban migration and raised challenges in meeting employment quantity and quality [137, 143]. Rural to urban migration is common, particularly among young people searching for job opportunities [149, 154]. Young migrants often face considerable financial and social challenges and are vulnerable to abuse and exploitation [154]; this group is considered at increased risk of HIV [154]. The skills and desires of young people often do not match the available jobs, and there is low uptake of vocational training. Subsequently, much of skilled labour comes from migrants from China and Vietnam. The mismatch between the job market and job seekers means unemployment is an issue for young people in both rural and urban areas and increases vulnerability to social problems and human trafficking [137]. Reports suggest that human trafficking is increasing in Laos, including sexual exploitation of women and girls in the entertainment sector and labour exploitation of men and boys on plantations [155]. Inward trafficking also occurs, with women and girls trafficked from Vietnam, China and Myanmar to Laos [148]. Migrants and immigrant workers in Laos are considered vulnerable to HIV due to higher propensity to purchase sex [156].

Health system in Laos

The Lao health system is delivered through central, provincial and district hospitals owned and operated by the government. Four central hospitals provide tertiary curative care, 12 provincial hospitals provide treatment and rehabilitation services, and 130 district hospitals provide health

promotion, disease prevention, diagnosis and treatment. Primary care is delivered through health centres, outreach services, and community-level health care, including volunteer health workers. In addition to the public sector, there are a growing number of private clinics situated mainly in urban areas. Traditional medicine practitioners also operate at a national, provincial and local level [147].

Implementation of health services and policies is the responsibility of the Ministry of Health, which acts through Provincial Health Offices and District Health Offices. Health financing is funded through out-of-pocket payments (63%), government health expenditure (5.9%), social health protection schemes (18%) and external funding from donors and projects (15%) [147]. Drugs are procured through a revolving drug fund, which, after an initial capital investment, relies on consumer sales to fund ongoing procurement. Guidelines permit facilities to charge a mark-up of up to 25% on the purchase price of drugs, and drug sales are an important source of revenue for Lao health facilities [142].

Critical challenges facing the Lao health system include shortages of skilled and adequately trained staff, regional disparities in access, low motivation and productivity, and poor quality of services. On average there are 2.17 health workers per 1,000 population [147]. Due to the reliance on of out-of-pocket spending, which entails both service user fees and drug costs, ability to pay is a major barrier to healthcare access [142]. Subsequently, self-treatment through pharmacy-bought drugs or traditional medicine are often the first line of health-seeking [157]. Utilisation of district hospitals and health centres is low, with a national average of 45% bed occupation [147].

1.3.2 HIV in Laos

Overview of the epidemic

Overall Laos is described as having a low-prevalence HIV epidemic, with the potential for concentrated epidemics in sub-populations [158]. In 2013, the national HIV prevalence in the general population aged 15–49 years was estimated at 0.29% [158]. By the end of December 2013 there were 6,239 reported cases of HIV, and an estimated 58% of children and adult people living with HIV had received ART [158]. Most transmissions are attributed to heterosexual contact (87%), followed by mother-to-child transmission (4.6%) and male-to-male sex (1.3%) [136]. The proportion of new cases attributed to male-to-male sex is expected to continue increasing [158]. At a population level, the division between HIV diagnosed in males and females is fairly even, at 56% and 44% respectively. However, among young people aged 15–29 years, 61% are female [158]. According to the Centre for HIV/AIDS/STIs (CHAS), 18% of prevalent cases are among married women who have not engaged in risk behaviour of their own, and were probably infected through their husbands [158]. HIV in Laos is predominantly urban, with 40% of infections diagnosed in Savannakhet, 33% in Vientiane, and 10% in Champasak [137].

History of HIV in Laos

HIV was first detected in Laos in 1989 in a Lao returnee from Thailand, and AIDS was first diagnosed in 1991 [153]. By the end of 1996 there were 157 cases of diagnosed HIV and 30 cases of AIDS; by June

1998 this had increased to 288 cases of HIV and 91 cases of AIDS among approximately 45,000 tested [153]. The increase in cases of HIV in the 1990s was largely attributed to international labour migration, with most diagnoses made among Lao migrants returning from neighbouring countries [156]. The high proportion of AIDS cases relative to HIV infections suggests substantial HIV under-reporting or under-diagnosis [153]. In the 1990s HIV testing was carried out fairly unsystematically among bar workers, blood donors, migrant returnees, prisoners, hospital patients suspected of having AIDS, and people requesting anonymous testing [153], and thus does not accurately represent HIV prevalence in Laos [159].

HIV and STI surveillance

Some form of HIV and STI surveillance has been carried out in Laos on an ad hoc basis since 2001, and a Monitoring and Evaluation Unit was established in 2013 [158]. Surveillance activities include monthly reports from provincial and central hospitals and bio-behavioural surveys among key populations [158, 160]. A summary of all bio-behavioural surveys is provided in Table 3.

Second-generation surveillance, or integrated bio-behavioural surveillance (IBBS), was first initiated in 2000–2001 among male and female cross-border seasonal migrant workers, female factory workers, service women[2], long-distance truck drivers, police and military. Five provinces were purposively selected based on their population density, distribution of previous HIV notifications, and their centrality to mobile and migrant populations in Laos [161, 162].

The second survey was conducted in 2004 among service women, male long-distance truck drivers, military and police personnel, and state enterprise workers across six provinces [163]. State enterprise workers are men aged 19 to 49 working for the state waterworks or electricity authority. They have a higher than average income and thus greater opportunity to pay for sex than the average worker [163].

The third round of HIV and STI surveillance was conducted in 2008 among service women and male state enterprise workers across six and four provinces respectively [164]. In 2009, behavioural surveillance was conducted among service women from five provinces. The fourth IBBS among service women was conducted in 2011 across six provinces [158]. In each of these rounds, biological surveillance was only conducted for some groups (see Table 3).

The first IBBS among MSM was conducted in 2007 in Vientiane Province and measured HIV prevalence only [48]. A second IBBS survey among MSM was conducted in 2009 in Luang Prabang Province and measured HIV and rectal STI prevalence [165]. A third IBBS targeting MSM took place in 2014, but results are not yet publicly available [158]. Different methods, location, inclusion criteria and behavioural indicators between the two studies on MSM limit comparability of results. For example, the Vientiane survey included men reporting oral or anal sex with a man in the previous six months, while the Luang Prabang survey limited participation to men aged 15–49 reporting anal sex with a man in the previous six months. The Vientiane IBBS used venue-day-time sampling at beer shops, bars,

[2] A service women is defined as a women aged 15–49 years who works in small drink shops, beer garden, karaoke bars or other entertainment establishments who may sell sex [161].

nightclubs, saunas, and massage parlours, which may bias the sample towards men with higher risk behaviour [166]. The Luang Prabang IBBS recruited MSM through respondent-driven sampling (RDS), which theoretically is considered a better estimation of true population but in practice is still prone to biases, particularly during seed selection [167, 168].

Table 3 Prevalence of HIV and other STIs in high-risk Lao populations based on bio-behaviourally surveillance surveys conducted since 2001

Sample population	Year	Provinces[a]	Sample size *n*	HIV prevalence	Syphilis prevalence	Chlamydia prevalence	Gonococcal prevalence
Service women	2001	VC, LPB, CPS, SVK, KM	811	6 (0.9%)	1 (0.2%)	247 (32.0%)	115 (13.9%)
	2004	VC, LPB, CPS, SVK, LN, BK, VP	1098	2.0%	0 (0.0%)	31%	19%
	2008	VC, LPB, CPS, SVK, LN, BK	1425	7 (0.4%)	0.4%	18%	7%
	2009	VC, BK, LN, ATP, SRV	912[b]	-	-	-	-
	2011	LP, VC, SVK, CPS, BK, LN	-	1%	-	-	-
Male long-distance truck drivers	2001	VC, CPS	300	0 (0.0%)	4 (1.3%)	28 (9.3%)	4 (1.3%)
	2004	VC, CPS, LN	377	0 (0.0%)	0 (0.0%)		
Police	2001	VC, LPB, KM, SVK, CPS	242[b]	-	-	-	-
	2004	VC, SVK, CPS, LN, BK	150[b]	-	-	-	-
Military	2001	VC, LPB, KM, SVK, CPS	244[b]	-	-	-	-
	2004	VC, LPB, SVK, CPS, LN, BK	1500	0 (0.0%)	0 (0%)	-	-
State enterprise workers	2004	VC, LPB, CPS, SVK	876[c]	0.2%	-	-	-
	2008	VC, LPB, CPS, SVK	712	2 (0.3%)	-	-	-
MSM (incl. TG)	2007	VC	540	30 (5.6%)	-	-	-
	2009	LPB	300	0 (0.0%)	-	25 (8.3%)	5 (1.7%)
MtF TG	2010	VC, SVK	450	4.2%	-	33.5%	11.7%
	2012	VC, SVK	417	3.1%	-	38.1%	20.7%
People who use drugs	2010	HP, PG	550	8 (1.5%)	-	-	-

[a] VC, Vientiane Capital; VP, Vientiane Province; LPB, Luang Prabang; SVK, Savannakhet; CPS, Champasak; KM, Khammuane; BK, Bokeo; LN, Luang Namtha; ATP, Attepeu; SRV, Saravane; HP, Huaphan; PG, Phongsaly

[b] No biological testing conducted

[c] Data shown for electricity workers only. 150 water workers included in behavioural survey only.

MSM, men who have sex with men; MtF TG, male-to-female transgender people (kathoey); hyphen signifies data not available.

Male-to-female transgender people were included in previous surveys of MSM but were also specifically targeted for a behavioural survey in 2004 [2] and IBBSs in 2010 [169] and 2012 [170]. Each IBBS was conducted in Vientiane Capital and Savannakhet, and included 450 and 417 respondents respectively.

In 2010, a rapid assessment and response study was conducted among drug users in two provinces [171].

HIV and STI prevalence in key populations

Prevalences of HIV and other STIs in specific populations with higher risk behaviours, based on bio-behavioural surveillance, are reported in Table 3. The highest HIV prevalence observed was among MSM in Vientiane in 2007 [48]. Elsewhere, HIV prevalence has remained below 1% in all groups. Prevalence of STIs is high in all groups, but exceptionally high for chlamydia (>30%) and gonorrhoea (>10%) among service women and kathoey.

According to the current National Strategy and Action Plan (NSAP) on HIV/AIDS/STI (2011-2015), the priority populations for HIV prevention in Laos are sex workers and their clients, MSM, people who inject drugs, and the general population [156].

Men who have sex with men and transgender women

MSM were first identified as a priority population for HIV prevention and control in Laos in the NSAP on HIV/AIDS/STIs released in 2006 [172]. The 2011–2015 NSAP on HIV/AIDS/STI expanded on this to recognise that there are subgroups of MSM, and transgender people and male-identified MSM may require different approaches for HIV prevention [156]. Despite this, data reported on sexual risk behaviours and HIV and STI prevalence among MSM are usually not disaggregated, limiting the meaningfulness of data; both IBBS on MSM include kathoey in their sample. Furthermore, the term MSM is often used when referring to male-to-female transgender people, and data from studies sampling kathoey are sometimes erroneously extrapolated to MSM [158]. In general, greater disaggregation of data for MSM and transgender people is needed to understand and inform targeted and appropriate programs for various sub-groups, include straight-identifying MSM.

There are no recent data on MSM in Laos, and data from the 2007 and 2009 IBBS are not comparable due to reasons discussed above. In the 2007 IBBS (Vientiane), 30 MSM (5.6%) were HIV positive. When controlling for other factors in multivariable analysis, the only factor significantly associated with HIV positivity was suicidal ideation (AOR 2.91, 95%CI 1.26–6.72, p = 0.01). No other STI testing was conducted, but 42% of MSM reported ever experiencing STI symptoms [48]. Comparatively, in the 2009 IBBS (Luang Prabang), no MSM tested HIV positive, but the prevalence of rectal STI infection was high [165]. Of note, the 2009 IBBS is described as being "ad hoc," raising questions on its validity [158]. Overall 9% tested positive for rectal chlamydia and/or gonorrhoea (n=25, RDSAT[3] adjusted prevalence 4.5%), including 8.3% positive for rectal chlamydia and 1.7% positive for rectal gonorrhoea. Because only rectal swabs were collected, the prevalence of genital (and oral infection) was undoubtedly underestimated, particularly given that 39% of men reported only insertive anal sex with male partners. A fifth (21%) of men reported experiencing STI symptoms in the previous three months. Further risk behaviour data among MSM are reported in section 1.3.2. While these studies provide the best estimates available of HIV prevalence among MSM in their respective cities and use

[3] Prevalence statistic adjusted for respondent driven sampling methodology by accounting for personal network size and homphily in recruitment

accepted study designs for researching hidden populations, they are not probability-based samples and may not be representative of the broader population [167].

The prevalence of HIV among kathoey was similar in the 2010 and 2012 IBBS (3–4%), and prevalence of STIs was very high in both years [170]. In 2012, 11.3% of kathoey were coinfected with chlamydia and gonorrhoea. HIV positivity was higher in kathoey who reported selling sex in the past year (7% vs 1.7%, $p < 0.05$), and STI positivity was notably higher among those residing in Vientiane Capital than in Savannakhet [170].

Female sex workers/service women

Service women have the most longstanding inclusion in Lao national HIV policy and surveillance of any high-risk group. HIV prevalence remains low in this population, at 0.4% in 2008, but was higher in Bokeo (2.1%) and Vientiane Capital (0.7%). In provinces with prevalence estimates across multiple years (Vientiane and Savannakhet), temporal trends are unclear, increasing from 1.0% in 2001 to 2.0% in 2004, before decreasing to 0.4% in 2008 [164]. Despite relatively low prevalence of HIV, STI prevalence remains very high among service women in Laos, and regional disparities exist. Chlamydia prevalence rises to 27-28% in three provinces, and gonorrhoea prevalence reached 14% in Luang Prabang in 2008 [6]. However, prevalence of both chlamydia and gonorrhoea appear to have decreased between 2001 and 2008 (Table 3). The 2008 prevalence of lifetime syphilis, based on a positive treponemal test, ranged from 0% in Vientiane and Savannakhet provinces to 2% in Luang Namtha and Bokeo provinces.

Based on three provinces which have been included in IBBS surveys since 2001, the proportion of service women selling sex has increased from 70% in 2001 to 95% in 2008. Overall condom use at last sex has increased, with condom use with a client increasing from 86% to 94%, and condom use with a casual partner increasing from 29% to 68% between 2001 and 2008.

Clients of sex workers

Since 2001, clients of sex workers have been captured in IBBS through samples of male long-distance truck drivers [156, 163], police and military personnel [156, 163], and state enterprise workers [163, 164]. According to the NSAP for HIV/AIDS, clients of sex workers usually frequent sex workers for five years before becoming lower-risk men [156]. They are often married or in other sexual relationships with regular or casual partners.

In the 2008 IBBS, 48% of electricity workers reported sex with a FSW in the previous month, which was similar to the previous year (51%). Of these men, nearly half (47%) reported having sex with a FSW three or more times in the past year. Overall, 91% reported condom use at last sex with a FSW. In comparison, 50% reported condom use at last sex with a casual partner. The most common settings for soliciting FSWs for sex were drink shops (64%) and guesthouses or hotels (15%). The HIV prevalence of electricity workers in 2008 was 0.3% [164]; stratification of results by engagement in paid sex was not reported. Testing for other STIs was not undertaken for electricity workers.

People who use drugs

There is little data on people who use drugs in Laos, and even less is known about PWID. Increased HIV risk is this population is predominately through sharing unsterile needles and syringes. In 2010 a bio-behavioural rapid assessment was conducted among 546 people who use drugs in Huaphanh and Phongsaly Provinces, but only 46 respondents reported injecting drugs, so prevalence results are not stratified for PWID and other drug users [171]. Prevalence of opium and heroin use was 64% and 27% respectively in Huaphanh province and 67% and 11% respectively in Phongsaly province. Fifty-four per cent of the PWID interviewed in Huaphanh and 56% of those in Phongsaly reported using a sterile needle and syringe at last injection episode. HIV prevalence was 1.5%, higher in Huaphanh (2.0%) than Phongsaly (0.8%) [171]. Huaphanh province borders Vietnam, where IDU is more common and HIV prevalence among PWID is exceptionally high (56% in the neighbouring Vietnamese province Dien Bien in 2009), raising concerns about the potential for an epidemic [30].

In additional to transmission risk through unsterile needles and syringes, people who use drugs can be exposed to HIV through sexual risk. Most drug users had had sex in the previous month (78% in Huaphanh, 84% in Phongsaly) [171]. Reported condom use among drug users was exceptionally low in both Huaphanh and Phongsaly: only 8% and 18% respectively reported *ever* using a condom, of which 48% and 64% respectively reported using a condom at last sex. Knowledge of HIV was also very low, with only 23–24% of drug users in Huapanh and Phongsaly having ever heard of HIV.

Independent of injecting risks, the use of other drugs increases HIV risk by increasing the likelihood of someone engaging in risky sexual behaviour [173]. Laos is part of the transit route for methamphetamine, heroin and opium originating from the Golden Triangle [174]. In Laos, the use of methamphetamines, locally known as *yabaa* and usually taken orally, is increasing [174]; however, there is inadequate data on the prevalence of drug use in Laos and associated risks.

1.3.3 Men who have sex with men and transgender women in Laos

The current National Strategy for HIV [156] and previous reports in Laos [2, 48, 165] include male-to-female transgender people as a subgroup of MSM. This is increasingly seen as problematic, with impetus to consider transgender people as a separate group to MSM in order to better recognise their unique needs and acknowledge their gender identity [10]. However, given the structure of existing literature, this section reports on transgender identities and behaviour under the heading of male-to-male sex, while acknowledging the limitations of doing so.

Male-to-male sex in Laos

In Laos, male-to-male sex is relatively commonly reported among young men. In 2006 young men aged 18–30 years were recruited in Vientiane through purposive sampling at entertainment venues, private residences, dormitories, workplaces, restaurants, public parks, colleges, temples and other public spaces. Of 800 participating young men, 18.5% reported ever having sex with another man, of which half reported anal sex [175]. Population estimates conducted in 2010 as part of Asia Epidemic Modelling suggest that there are 49,330 MSM in Laos (including male-to-female transgender people),

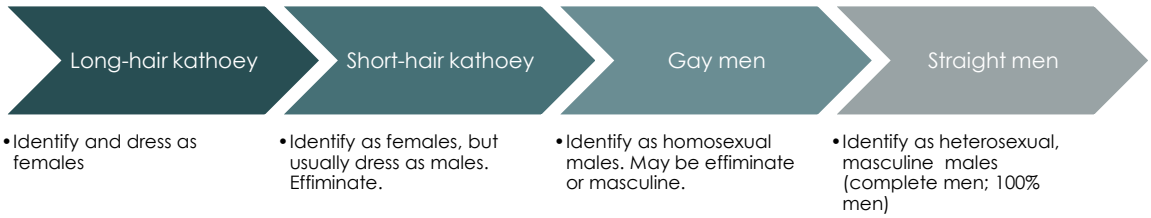
3% of the male population [156]. However, these figures are based on indirect measures by projecting from regional averages, and more robust population size estimates are needed.

It is common for MSM in Laos to report sex with women. In a study of 540 MSM in 2007 recruited through venue-day-time sampling, 39% also reported sex with a woman in the previous three months, and 42% reported more than one male sexual partner in this time [48]. In the 2006 study of young men, 8% of men reported sex with at least one man and one women in the past six months [175].

Sexual orientation of MSM in Laos

As elsewhere, in Laos MSM includes a diverse group of men, who do not necessarily identify as gay, bisexual, homosexual or their cultural equivalents. Including transgender people, studies have described subgroups of MSM in Laos using a combination of identity and behavioural descriptors and culturally relevant terms. Previous reports have described these terms on a continuum relating to effeminacy, self-identification and public openness with homosexuality (Figure 2) [2, 4]. While this continuum may accurately portray a graduation of effeminacy, it is potentially problematic to consider gender identity as an extension of sexual identity. However, existing research from Thailand, which is culturally and linguistically similar to Laos, shows that gender and sexuality are not considered distinct concepts in the region [113]. Regardless, the proposed continuum gives the impression of a comprehensive description of local sexuality yet likely oversimplifies the spectrum of sexual and gender diversity in Laos and risks overlooking important subgroups of MSM.

Figure 2 Sexual orientation in Laos as a continuum of effeminacy, self-identification and public openness, as proposed by Lyttleton and PSI



Adapted from [2, 4]

The most visible subgroup of sexual and gender minorities Laos are long-hair kathoey (*kathoey teng ying)*, who are assigned male at birth and both identify and dress as women [2, 169]. Short-hair kathoey (*kathoey phom yao*) are born biological males and identify as women but usually dress as men. Collectively these groups can be described as male-to-female transgender people or transgender women, and are referred to as 'kathoey' in this thesis [115]. More specifically, kathoey identify as non-male, but their distinct identity might be female, kathoey or a third-gender ('women of the second kind'); in a formative study of 217 transgender kathoey, 9%, 55%, and 36% expressed these identities respectively [176]. Kathoey are usually attracted exclusively to men, and these attractions are often viewed as heterosexual [177, 178]; only a minority report female sex partners [179]. Kathoey usually have a receptive role in anal sex and perform oral sex [2]. In Laos kathoey rarely undertake sex reassignment surgery, but it is relatively common for kathoey in Laos to take hormones to increase feminisation, usually in the form of the oral contraceptive pill. This is nearly always unsupervised by

health professionals and can be associated with numerous side effects, ranging from aesthetic to serious health risks [176]. A previous study found that kathoey in Laos are largely accepted in their families, communities and wider society, and face a low level of stigmatisation. However, the evolving and increasing internationalisation of Laos could lead to lower tolerance and more discrimination against kathoey [177].

As well as describing male-to-female transgender people, the term *kathoey* in Laos (as well as neighbouring Thailand and Cambodia) can serve as an overarching term describing men with a sexual orientation towards men, who might be labelled homosexual or effeminate elsewhere [176]. Despite its linguistic history in the region, in more recent years the term kathoey has acquired derogatory overtones in some contexts [4].

'Gay' identity is a relatively new concept in Laos [4], which has emerged through increasing international exposure to media and tourism. It is particularly adopted as a social category by men wishing to be open about their sexuality without adopting effeminate identities. However, it is yet to be associated with the social representation and advocacy seen in other international contexts [4]. Some studies in Laos differentiate between masculine gay and effeminate gay men [48], and it is hard to distinguish between effeminate gay and short-hair kathoey [4].

Previous studies have shown that many MSM in Laos do not identify as gay, transgender, or their cultural equivalents; Toole *et al.* (2006) reported that most men engaging in sex work identify as 'straight' or heterosexual [175]; while Sheridan *et al.* (2007) found that half of participating MSM identified as straight. Local terms used to depict MSM but who identify as straight include *phu bao* (lad) [4], *phu xai tem loi* (100% men) [4], and *phuxay tem tua* (complete men; literally 'full bodied men') [175]. Previous reports consider these men to be the partners of kathoey, as well as women, and describe that they usually practise insertive anal sex and receive oral sex [2, 4]. A related subgroup of MSM is older and often married men who have sex with men and women in versatile roles but still identify as straight [2].

Previous surveys of MSM in Laos demonstrate large variance in sexual identity. In the Vientiane IBBS, of 540 participating MSM 19% identified as effeminate gay, 12% as transgender, 19% as masculine gay, and 50% as straight men [48]. These figures are not suggestive of the actual population breakdown, as sampling quotas were set to ensure adequate representation of men of varying sexual and gender identities. In the Luang Prabang IBBS, of 300 participating MSM, 25% identified as heterosexual, 38% as bisexual, 16% homosexual/gay, 5% transgender, and 16% reported not knowing their sexual identity [165].

Sexual attraction also does not always match identity or behaviour in Laos. Among heterosexual-identifying MSM in Luang Prabang, 33% reported attraction to men and 33% attraction to kathoey, despite all men have engaged in anal sex with men or kathoey in the past year [165]. This supports qualitative accounts that straight-identifying MSM may have sex with men or kathoey due to opportunity, financial gain, or experimentation rather than attraction, and male-to-male sex often occurs in the context of a transactional exchange or alcohol intoxication [4, 175]. Bisexual-identifying MSM were largely attracted to people of all genders, while gay-identifying MSM were predominantly

attracted to men (89%). However, one fifth of gay men also reported attraction to women [165]. Nearly half of kathoey reported attraction to women, although this was based on a small number. Among MSM in Vientiane, 60% were not exclusively attracted to men [48].

Sexual behaviour of MSM in Laos

MSM in Laos commonly report high-risk behaviour for sexual transmission of HIV and STIs. These data come from IBBSs of MSM in Vientiane (2007) [48] and Luang Prabang (2009) [165], discussed in section 1.3.2. Both of these surveys included transgender women (12% and 5% of samples, respectively).

In each IBBS, over a fifth of MSM reported selling sex (22–23%) and buying sex (23–28%) in the past three months [48, 165]. In comparison, in 2012 only 12% of kathoey reported selling sex and 7% buying sex in the past month [170], but a direct comparison is problematic due to the different recall periods. Multiple sex partners are common, and in Vientiane, 42% of MSM reported more than one male partner in the past three months [48]. In Luang Prabang, MSM reported regular sex partners in the past three months who were male (14%), female (28%), and kathoey (3%), and casual sex partners who were male (28%), female (33%) and kathoey (21%) [165]. In Vientiane, 58% of MSM reported ever having sex with women, and 39% reported sex with women in the past three months [48].

MSM in Laos reported low rates of consistent condom use (CCU) in the past three months (Table 4). In Vientiane, MSM reported higher CCU when buying or selling sex than with regular and casual sex partners [48], while in Luang Prabang, this was only true when buying sex from male sex workers [165]. CCU was relatively high among kathoey, ranging from 60–69% with casual, paid or paying sex partners in 2012 [170].

Table 4 Consistent condom use (CCU) in the past three months by partner type

Partner type	Vientiane (2007)[a] (%)	Luang Prabang (2009)[b] (%)	TG (2010)[a,c] (%)	TG (2012)[a,c] (%)
Regular partner	14	--	42	58
Casual partner	24	37	48	60
Foreign partner	50	56	--	--
When sold sex	33	40	58	69
When bought sex	34	51 MSW; 30 FSW	62	66

[a] Question does not specify partner gender
[b] CCU only asked for male sex partners.
[c] Question specifies joint condom and water-base lubricant use
-- Not asked; TG=transgender (kathoey); MSW=male sex worker; FSW=female sex worker

HIV knowledge and perception of risk

HIV knowledge was not assessed in the 2007 study of MSM in Vientiane. In the 2009 IBBS (Luang Prabang), gaps in HIV knowledge were apparent. The proportion of MSM who reported knowing that HIV can be transmitted through unprotected anal sex (70%) was significantly lower than the proportion knowing that HIV can be transmitted through unprotected vaginal sex (83%; $p<0.01$). Only

53% of MSM knew that you cannot tell someone has HIV by appearance, and 76% agreed that monogamous couples are protected against HIV [165].

Among kathoey surveyed in 2012, knowledge of HIV transmission was generally high. For example, 95% knew that a healthy-looking person can still be infected with HIV/STIs, and 85% agreed that monogamous couples can help prevent HIV transmission [170].

Within the general population of young people in Laos, knowledge of HIV is high but misperceptions are common. In 2000, the Lao Youth Union conducted an Adolescent Reproductive Health Survey of 1560 young people aged 15–24 years. Knowledge of HIV was higher than STIs, with 81% of young people reporting having heard of HIV/AIDS compared to 49% having heard of an STI [180]. Knowledge was highly dependent on education level, and only 33% of those without schooling had heard of HIV. Despite this, only 3% of youth reported having learnt about HIV at school, with 20–25% reporting they had learnt about HIV from each of family/friends, radio, TV and print media. This and other surveys of young people in Laos have shown that misperceptions about HIV are common, such as believing that you can tell by looking that someone is infected with HIV, and that washing the genitals after sex protects against HIV [180].

1.3.4 HIV prevention in Laos

Overview of HIV prevention programs for MSM and transgender women

Laos remains highly dependent on international support for HIV prevention programs, and this has implications for sustainability. Ninety-three per cent of HIV spending in Laos is from international sources, of which 73% was funded through the Global Fund to Fight AIDS, Tuberculosis and Malaria ('the Global Fund') in 2011 [12]. Since 2003, Laos has secured multiple rounds of funding through the Global Fund for HIV, totalling US$27,290,494 by 2014 [181].

HIV prevention interventions targeting MSM and transgender women in Laos include drop-in-centres (DICs), peer education and condom programming [172]. However, many of these interventions have been predominantly targeted to kathoey or gay-identified men [3, 4, 138]. Population Services International (PSI) Laos run three DICs targeting kathoey and their partners, located in Vientiane Capital, Luang Prabang and Savannakhet [169]. These provide HIV testing, peer education and outreach, referrals to STI testing and treatment, and some vocational training, such as hairdressing and massage. In the past STI screening and treatment have also been available at the DICs, but this is no longer the case (Personal communication, anonymous respondent, October 2013).

In Laos HIV prevention targeting MSM and kathoey is largely implemented through peer education run by PSI, LaoPHA and the Provincial Committee for the Control of AIDS (PCCA) [138]. Outreach is conducted on college campuses and drinking establishments. Previously (2007–2011) the Burnet Institute also implemented peer education among MSM [182].

PSI has led a condom social marketing program in Laos since 1999. PSI markets and distributes *Number 1* condoms. There are five different condom kits in the range, including the *Number 1 Deluxe*

Plus which is targeted towards MSM and kathoey and provides two condoms alongside two sachets of water-based lubricant [3, 183]. In addition, PSI markets the *1-Stop* STI treatment kit, which is a dual combination of antibiotics sold over-the-counter to presumptively treat suspected chlamydia or gonorrhoea infection in males [183].

The 100% Condom Use Program was implemented in Laos in 2003 in Savannakhet and later rolled out to other provinces. The program aims to facilitate condom use during commercial sex by involving provincial health authorities, law enforcement, sex workers, and the owners and managers of sex establishments to encourage a 'no condom, no sex' policy. The program incorporates advocacy, outreach with sex workers, and distribution of condoms. Free condoms are provided to these establishments but whether they sell or give away the condoms is up to the owners. Condom distribution is funded by the Global Fund and implemented through CHAS, PCCA and PSI [184]. Distribution is through guesthouses, hotels, and beer shops, as well as DICs and community organisations.

Other HIV prevention initiatives in Laos include DICs for FSWs, prevention of mother-to-child transmission, and blood screening [158, 185]. From 2011-2013, a prevention program was conducted in rural villages in Huaphan province, the site of a road construction project between Vietnam and Laos [158]. Harm reduction for drug users is lacking, and generally limited to information and counselling to PWID through outreach [186]. ART is provided free of charge through the Global Fund, and in 2012 55% of people living with HIV were receiving ART [158]. Adherence to ART over 12 months is 85%, but problems with supply are reported [158].

Coverage of HIV prevention services

The current NSAP on HIV/AIDS/STI (2011–2015) aims for 80% coverage of HIV interventions among key populations [172]. However, coverage of HIV testing appears very low among MSM in Laos. In Vientiane in 2007, 6.3% of MSM reported a prior HIV test [48], while in Luang Prabang, 16% reported testing for HIV in the past year, of which the majority had been tested at a hospital or STI clinic [165]. There is no data available on access to other STI services. According to Global Fund performance indicators, in 2014 14.5% of MSM were reached by peer educators [187], and there were 20 MSM outreach workers and 302 MSM peer educators [158]. There is no data on subgroups of MSM. More detailed data on the nature of peer contacts and impact of peer education is not available.

Compared to all MSM, the proportion of kathoey reporting an HIV test in the past year is high and increased from 37% in 2010 to 51% in 2012 [169, 170]. Over the same period, the proportion reporting having been screened for STIs increased from 28% to 35%. In 2012, 77% reported knowing where they can get an HIV test [170]. Among FSWs, 26% in Vientiane and 33% in Savannakhet had ever tested for HIV [164].

In the 2012 tracking survey of kathoey, 71% reported having been exposed to either a peer educator in the past 12 months or a DIC in the past three months [170]. Exposure to peer educators or a DIC was associated with reporting an HIV test (65% vs. 14%) and an STI screen in the previous 12 months (45% vs. 5%), compared to those who had not been exposed. Reasons for visiting the DIC included to meet

friends (87%), get a free condom (76%), get information on HIV and STIs (65%) and HIV testing (59%).

In 2009 a study was conducted to evaluate the market penetration of the *Number 1* condoms and *1-stop* treatment kit. Overall, market penetration was 76% for condoms and 38% for the 1-Stop STI treatment kit [183]. However, the *Number 1 Deluxe Plus* condom, which is the only PSI-branded condom including lubricant, had much lower penetration, ranging from zero to 25% across provinces. Another issue discussed was the low visibility of condoms being sold in guesthouses (8% visible), beer shops (6%), and bars/nightclubs (0%) [183].

1.3.5 Policy environment

Whether prohibitive or supportive in nature, laws and policies covering sex, marriage, access to health care, criminal behaviour, child protection, and human rights influence the health, well-being, safety, and access to services of MSM. This section presents a review of the policy environment in Laos and its implications for HIV and sexual health in behaviourally bisexual men.

Sex, Marriage and Homosexuality

Although homosexual acts among men are not criminalised in Laos, Laos lacks a supportive legal and policy environment and is considered to have a neutral legal environment affecting HIV responses among MSM [188]. There are no protective or enabling laws, and same-sex relationships are not legally recognised.

The age of consent to heterosexual sex is 15 years (Penal Law 2005, article 129). Lao law pertaining to marriage (Law of Family, 1990) only has provisions for marriage between men and women. The legal age of marriage is 18 years for males and females (Family Law 1990). There is a customary law against sex before marriage, which states that 'If sexual relations occur before marriage and the man does not marry the woman, he shall have to make offerings to restore the spirit of the woman or of her family according to custom and tradition' (Article 8, Law of Family, 1990).

It is prohibited and punishable for a monk or novice to have sex with a man or women (Penal Law 2005, article 128). However reports suggest that large numbers of monks engage in sex with men [151], thus this law probably inhibits access to appropriate sexual health and HIV services.

HIV and health

The Law on Health Care (2006) dictates that all Lao citizens are entitled to healthcare regardless of gender, age, ethnic origin, race, religion or socio-economic status.

Policy specifically promotes access to sexual and reproductive health for young people. The National Reproductive Health Policy (2005) promotes access to youth-friendly information, counselling and reproductive health services for both single and married young people that are confidential, do not require parental consent, are affordable or free of charge, and accessible in a variety of settings [189].

In Laos, specific laws govern access to HIV testing and treatment. The age of consent to HIV testing without the consent of a parent, guardian or next of kin is 14 years (Law on HIV/AIDS Control and Prevention, 2010, article 18). This is younger than the age of sexual consent (15 years), and is thus supportive of HIV prevention.

The Law on HIV/AIDS states that people living with HIV/AIDS are equal to other people in the society and should be able to live and complete daily activities without stigmatisation and discrimination; that they should have access to treatment according to the National guidelines; medical personnel should keep all information concerning HIV/AIDS patients confidential; and Lao citizens and other people residing in Laos have rights to have access to information about HIV/AIDS control and prevention. The Law also outlines responsibilities of the Committees for the Control of AIDS at the national, provincial and district levels.

Children infected or affected by HIV/AIDS are referred to in the Law on the Protection of the Rights and Interests of Children (2006). The Law states that children affected by HIV/AIDS (infected, orphaned, or living with a family member with HIV) have the right to access to health care and education, to live with their families and to be protected from all forms of discrimination for the community and society.

There is minimal sense of a coordinated legal and policy response to HIV prevention and control across sectors in Laos. For example, laws concerning prisons and military service do not mention environments or circumstances where male-to-male sexual activity takes place, and only penal law refers to sex work (with respect to prosecution for prostitution). The exception is the Law on Protection of the Rights and Interests of Children, which refers to children affected by HIV. In addition, the Law on Hygiene, Disease Prevention and Health Promotion (2001) mentions the individual and family's responsibility to prevent STIs. This law also refers to the inclusion of health education in the school curriculum, including education on sexual safety, and the involvement of organisations involved in health, education, culture, information and the mass media in providing health education and knowledge to the population.

Discrimination

In Laos, there is no specific law concerning sexual discrimination. Several Laws (on Labour, HIV, Development and Protection of Women, Health, Protection of the Rights and Interest of Children, Penal Law) refer to protection again discrimination based on race, nationality, gender, age, religion, ethnicity, beliefs, and socio-economic status, but sexuality is not mentioned.

Sexual violence

The law against sexual violence refers to rape of a women or sexual intercourse with a child under the age of 15 years (Penal Law 2005, article 128), but there is no mention of sexual violence against men aged 15 years or older.

Prostitution

Prostitution is illegal in Laos, with both the person generating income though procuring sex and any person(s) facilitating or assisting prostitution liable to fines, re-education and imprisonment. There is no reference to the gender of people engaging in prostitution, but there is special mention of prostitution and forced prostitution involving female minors (Penal Law 2005, article 132).

1.4 HIV prevention among men who have sex with men

HIV prevention can be thought of in terms of biomedical, behavioural and structural approaches. Combination prevention programs for HIV incorporate a mix of all three approaches in order to maximise the impact on transmission [190]. Combination prevention should be strategic and evidence-based, tailored to national and local needs, address both immediate risks and underlying vulnerability. A combination prevention approach to comprehensive condom programming requires biomedical prevention through dual condom and lubricant use; behavioural interventions to encourage consistent condom use, provide skills-building in condom negotiation, and promote awareness and benefits of condom use; and supportive structural interventions to ensure adequate supply of affordable condoms and lubricant through multiple outlets, promote the acceptability of condoms through community campaigns, and implement supportive legislation [5].

1.4.1 Biomedical approaches

Biomedical interventions for HIV prevention most relevant to sexual transmission in MSM are condoms and lubricant, diagnosis and treatment of STIs, pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP), and ART [60, 116].

CCU reduces HIV transmission between serodiscordant MSM couples by 64–70% [191, 192]. In comparison, inconsistent condom use (sometimes using condoms) offers minimal to no reduction in transmission risk, thus underscoring the importance of CCU for MSM [191]. Condom effectiveness among MSM is moderately lower than the 80% risk reduction estimated among heterosexual couples [193].

Anal sex poses higher risk of HIV transmission than vaginal sex because the rectal mucosa has less natural lubrication and is more susceptible to abrasions and tears, which facilitate HIV transmission [43, 194]. Without concurrent use of condom-compatible lubricant, condoms increase friction and the risk of condom breakage and slippage, and cause pain and discomfort. While using oil-based lubricant with latex condoms can increase condom breakage [195-197], the use of water-based lubricant increases the effectiveness and acceptability of condoms during anal sex [198] and is an important component of HIV prevention in MSM [192].

PrEP is a recent recommendation in WHO guidelines as an additional option for HIV prevention in key populations [5]. Whereas PEP is a course of antiretroviral therapy taken after exposure to HIV-infected fluids [199, 200], PrEP, as the name suggests, is taken prior to exposure among people engaging in high-risk behaviour in order to block the acquisition of HIV. Studies have demonstrated

that PrEP is effective in reducing HIV transmission in MSM, transgender women, serodiscordant and high-risk heterosexual couples, and PWID [5]. In the multinational iPrEx trial, daily oral tenofovir-emtricitabine reduced HIV incidence by 44% compared to placebo among MSM and transgender women [201], while in the UK-based PROUD study, daily dosage reduced infection rate by 86% among MSM [202]. Due to concerns about long-term adherence to a daily regimen, high costs, and risk of side-effects, the Ipergay study investigated the effectiveness of PrEP taken intermittently in the days before and after having sex ('on demand' two to 24 hours before planning to have sex). Results demonstrated comparable effectiveness to the PROUD study (86% reduction) [203].

Opponents to PrEP raise concerns about the potential for resistance and increases in sexual risk behaviour. However, results from iPREX and PROUD trials demonstrate no change in reports of condomless sex or increases in STI prevalence among those taking PrEP [201, 202, 204]. Evidence of resistance developing is low and related to participants already being infected at the time of study enrolment [201] or becoming infected while on PrEP [205]. HIV testing prior to initiating PrEP and adherence to the PrEP regimens are essential for drug effectiveness and to avoid resistance [201, 206]. Open-label studies have shown relatively high adherence; for example, in the US-based Demo Project among MSM and transgender women, adherence was 80–86% at follow-up visits over 12 months, defined as protective levels of Tenofovir-diphosphate detected in dried blood spots [207]. Older age, higher education, and higher risk-taking behaviour are associated with greater adherence [206].

Over time, WHO guidelines for the timing of ART have been revised to allow for earlier treatment irrespective of clinical stage. The original threshold of CD4 count was raised from 200 cells/µL to 350 cells/µL in 2010 and 500 cells/µL in 2013 [24, 208, 209]. Earlier initiation of treatment improves patient outcomes by delaying disease progression and reducing mortality [208]. The treatment-as-prevention (TAP) approach highlights that in addition to the individual benefits, early initiation of ART benefits the uninfected partners of those on treatment by preventing sexual transmission through reduction of the infected person's viral load. Studies of serodiscordant couples suggest that early initiation of treatment can reduce HIV transmissions by at least 96% compared to delayed treatment [210, 211]. With widespread coverage of ART community viral load decreases, conferring this benefit to the broader population [212]. Consequently, early access to ART has become an important component of comprehensive HIV prevention. Some guidelines now recommend, in what is known as the 'test and treat' model, that ART be given to all HIV-infected individuals irrespective of CD4 T-cell count in order to maximise the population benefits of TAP [24, 209]. Recently, the Strategic Timing of Antiretroviral Treatment (START) study demonstrated that this approach also significantly benefits individual health outcomes rather than only at a population level [11].

Other biomedical interventions, such as needs and syringe programs and opioid substitution therapy, are also relevant to MSM engaging in risks related to substance use or IDU [5]. Biomedical approaches such as HIV vaccines and rectal microbicides are under development, but to date these have not demonstrated suitable efficacy [60, 213]. The effectiveness of male circumcision in preventing HIV transmission through male-to-male sex has not been evaluated [116].

1.4.2 Behavioural approaches

For HIV prevention, behavioural interventions often target reducing risk-taking behaviour, such as condomless sex or risky alcohol use, or increasing health-seeking behaviours, such as uptake of HIV testing [214]. Behavioural interventions help to increase the adoption or effectiveness of biomedical interventions, including promoting condom and lubricant use or adherence to ART. Examples of behavioural interventions include one-on-one motivational counselling, peer education programs and outreach, group sessions, social marketing campaigns and mass media [5, 215]. Based on the collated evidence from four meta-analyses assessing behavioural interventions in MSM, it is estimated that group- and community-level interventions reduce risk in UAI by 27–30%, but the evidence for effectiveness of individual-level interventions is inconsistent [216]. Interventions based on theory, involving multiple sessions and skill-building and delivered by other MSM, might have greater effectiveness [217-219]. Encouragingly, one meta-analysis found that interventions based on samples including more than 25% non-gay-identifying MSM achieved the greatest reductions in unprotected sex [217], suggesting that behavioural interventions targeting non-gay-identifying MSM are particularly effective. However, nearly all behavioural interventions have been evaluated in North American, Australian and European settings, and it is not clear how they apply to resource-limited settings [116].

Internet-based strategies such as online motivational videos, web-based education modules, outreach through social networking sites, and text messaging are increasingly being used to deliver health interventions, including HIV prevention and sexual health campaigns among MSM [220-225]. Although the quality of evidence is low, results of a systematic review suggest that internet-based interventions are useful at reaching high-risk MSM and effective for reducing HIV risk behaviours and increasing testing rates [192, 226].

The application of internet-based strategies is increasingly relevant to Laos. An estimated 14% of the population had access to the internet in 2014, more than double the 2009 figure, and 67% had mobile phone subscriptions [125]. Internet coverage includes use via both computers and smartphones, and third-generation (3G) network coverage is rapidly expanding [227]. Internet use is higher in Vientiane than in provincial areas, and in the 2011-2012 Lao Social Indicator Survey, a third of young people aged 15–24 years reported using the internet during the past 12 months [126].

1.4.3 Structural approaches

Structural interventions are designed to address the underlying causes of vulnerability in order to foster an enabling environment for health and behaviour change. Vulnerability to HIV can be influenced by social and cultural norms, beliefs and laws that stigmatise certain populations, and environmental factors determining the accessibility of health and prevention services such as distance and cost. Social ecological frameworks of health and behaviour, discussed in the section 1.5.1, help to conceptualise the levels at these factors may influence behaviour and risk [190].

Examples of structural interventions for HIV prevention include environmental interventions to make condoms available in high-risk settings [228]; programs targeting social norms around condom use,

sex outside of marriage or reducing stigmatisation of homosexuality [229-231]; decriminalisation of sex work or same-sex behaviour [72, 75, 192]; and increasing the availability of appropriate clinical services [232, 233]. Sex venues have been used as settings for outreach to distribute condoms and provide community-based HIV testing for MSM [234-237], and there is limited evidence that structural interventions in bathhouses reduce risk behaviour in MSM [236, 237].

1.4.4 Current guidelines

The current WHO guidelines for HIV prevention among MSM are part of the *Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations*, introduced in July 2014 [5]. These consolidate previous guidelines to provide a cohesive and comprehensive package of recommendations to target five key populations: MSM, PWID, people in prisons and other closed settings, sex workers, and transgender people. Recommendations are evidence-based and consider the benefits and risks, acceptability, costs, and feasibility of potential interventions.

The guidelines include: correct and consistent use of condoms and lubricant; availability of PrEP to MSM; PEP; access to needle and syringe programs and opioid substitution therapy; access to evidence-based interventions for harmful alcohol and other substance use; routine HIV testing and counselling; access to ART; routine screening and management of mental health disorders; and routine screening, diagnosis and treatment of STIs [5].

1.5 Health Promotion and behaviour change theory

Health promotion theories provide a framework by which to explain behaviours, understand the process of behaviour change, inform the development of health interventions, and predict the scalability, transferability, and sustainability of an intervention [238]. By definition, a theory is:

> ...a systematic way of understanding events or situations. It is a set of concepts, definitions, and propositions that explain or predict these events or situations by illustrating the relationships between variables [239].

A multitude of theories related to behaviour and health promotion exist. Some of the most commonly used and cited theories both generally and in the field of HIV prevention are the health belief model, social cognitive theory, theories of reasoned actions and planned behaviour, and the transtheoretical stages of change model [238, 240-242]. A common element of these theories is a focus on the individual, and there is considerable overlap in terms of key constructs such as self-efficacy, perceived benefits, and behavioural intentions, although terminology differs between theories [243-246]. Other theories, such as diffusion of innovation theory [240, 241, 247], work to bring about behaviour change on a community-level. Some integrated theories, such as social ecological framework and integrated health promotion theory, seek to provide a more holistic model of behaviour and behaviour change by incorporating individual, social and structural factors.

Theory, research and practice are interrelated, and evolve through continual application and refinement [244, 246, 248]. One way of classifying theories is as explanatory or change theories [239]. Explanatory theories focus on describing the nature of a problem and reasons for why a behaviour or problem exist, whereas change theories are centred on developing and implementing interventions [239, 240, 247, 249]. The research objectives of this thesis principally focus on developing a descriptive understanding of the influences on sexual risk behaviour in behaviourally bisexual men (see section 1.6.2.) As such, it is predominantly concerned with explanatory theories. The final objective considers opportunities to engage behaviourally bisexual men in health interventions, and change theories can help to identify strategies and content for health promotion programs. The following section gives an overview of explanatory theories and describes a framework for integrated health promotion planning and implementation.

1.5.1 Explanatory theories

Health belief model

The health belief model considers that health behaviour is determined by an individual's perceptions and beliefs about a disease and available strategies to prevent disease. It proposes that an individual will change their behaviour to prevent illness if they believe they are susceptible to the condition, they regard the condition as serious, and if the benefits of action outweigh the costs. It was originally developed in the 1950s to explain participation in health screening programs [250]; since then it has become one of the most widely adopted models. For example, in HIV prevention it has been a popular approach to condom promotion, whereby campaigns aim to communicate the seriousness of HIV, benefits of safe sex, and promote confidence to use condoms [251-253]. The health belief model has been revised through empirical applications to include self-efficacy – one's perceived confidence in ability to carry out the preventative behaviour [254]. Overall, the key variables considered in the health belief model are:

- *Perceived susceptibility*: belief that one is at risk of a health condition;
- *Perceived seriousness*: belief that that the condition would have severe consequences;
- *Perceived benefits*: belief that a behaviour or action would reduce risk or minimise the consequences;
- *Perceived barriers to action*: beliefs about the negative consequences of adopting the preventative behaviour, such as enjoyment, expense, inconvenience, side effects, or pain;
- *Cue to action*: environmental or internal cues such as physical symptoms, media publicity, or reminders; and
- *Self-efficacy*: perceived ability and confidence to successfully carry out the action.

The health belief model is most useful in developing health promotion messages to improve knowledge and change beliefs [240].

Theories of reasoned action and planned behaviour

The theory of reasoned action is grounded in the assumption that humans make rational and predictable decisions based on the information available to them [240, 241]. It regards behavioural intention as the major determinant of behaviour. Similar to the health belief model, it focuses on perceived susceptibility, perceived benefits, and perceived constraints of adopting a behaviour. It also considers the roles of subjective norms: beliefs about other people's expectations regarding that behaviour and motivation to comply with other people's wishes or expectations. In later iterations of the theory, the original theorists, Azjen and Fishbein, added perceived behavioural control to the model and suggested it be called the theory of planned behaviour. According to the theory of planned behaviour, people will change their behaviour if they believe that the behaviour will benefit their health, that the behaviour is socially desirable, they feel social pressure to behave that way, and they feel they have personal control over the behaviour [240]. Interventions guided by this theory have a strong focus on the role of social norms, people of influence, and health beliefs.

Social cognitive theory

Social cognitive theory considers that behaviour is determined through interaction between cognitive, behavioural and environment factors, termed reciprocal determinism [240, 241, 243, 255]. Environmental factors include both physical and social environment, and the model emphasises the importance of social norms and influence. Personal cognitive factors include observational learning, outcome expectations and self-efficacy. Behaviours are learned by modelling the behaviours of others or through personal experience. Expectations refer to beliefs and values placed on the outcomes of different behaviours. Self-efficacy, the belief in one's ability to carry out a behaviour successfully, is regarded as an essential condition for behaviour change in the theory. Social cognitive theory provides a more holistic framework for health promotion programs than other individual theories of behaviour change.

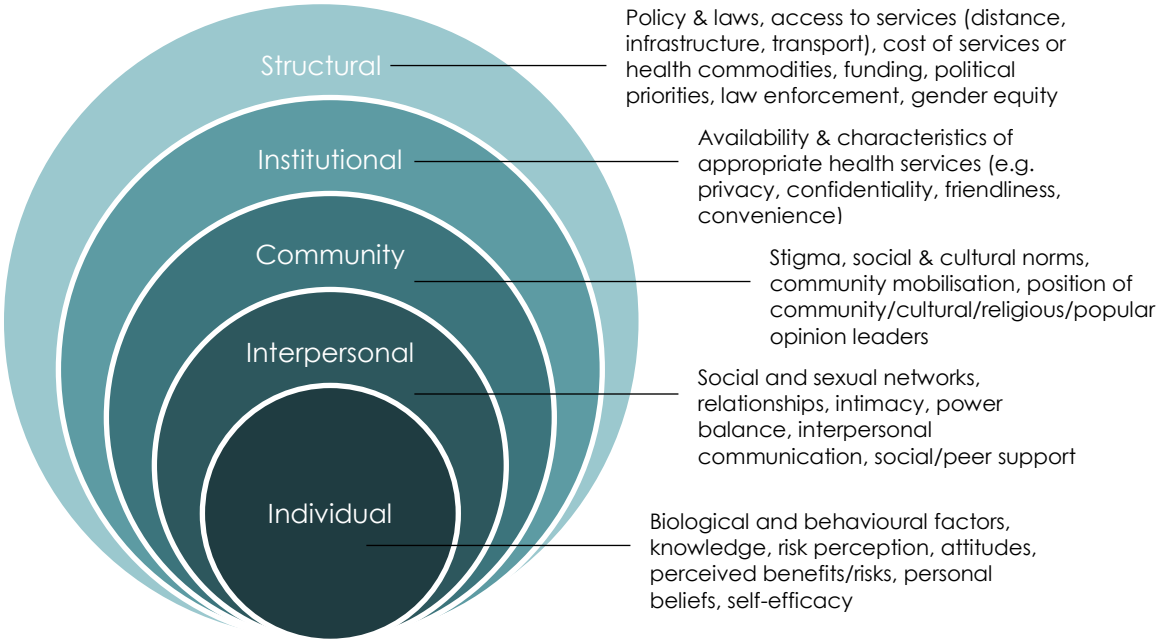
Social Ecological Framework

There are numerous limitations to the individual cognitive-based theories. They tend to assume that behaviour is rational and voluntary; for example, overlooking the importance of impulse and physiological motivation to sexual behaviour, or how the involvement of alcohol and other drugs inhibits rational decision-making [256]. These theories also give little consideration to interpersonal relationships and how these affect decision-making, such as a partner's preference and unequal power relationships impacting the decision to use a condom [241, 256, 257]. Finally, a major limitation and criticism of these models is their lack of consideration of social, environmental and economic factors that influence people's health behaviours; this particularly limits their ability to inform successful interventions for complex health issues [240]. For example, when considering sexual health and use of condoms, ability to modify one's own behaviour can be impeded by environmental, financial, social and religious constraints and considerations, such as money to buy condoms, the availability of condoms, fear of prosecution if found carrying condoms, and religious intolerance of condoms.

These limitations have spurred the development of social ecological models of health. The structural approaches to HIV prevention (see section 1.4.3) are largely built upon social ecological frameworks, which imply there are multiple influences outside of the realm of the individual that influence risk, behaviour and health [190].

While there are variations on how social ecological theory is encapsulated [238-240], they all demonstrate multiple levels of influence on behaviour, ranging from individual factors (knowledge, beliefs, attitudes, self-esteem) to interpersonal relationships (social and sexual networks, social support systems) to community factors (relationships among organizations and institutions) (Figure 3) [258, 259]. At the highest level are societal or structural factors such as policy, social, economic and cultural considerations. While this framework describes the presence of multiple and overlapping influences on behaviour, it does not explain the mechanisms by which these influences interact and exert control [238]. The social ecological framework is the basis of multiple models of health behaviour for HIV (Figure 3) [238, 260, 261].

Figure 3 Social ecological model and factors influencing HIV risk



1.5.2 Integrated health promotion planning and implementation

According to the Ottawa Charter (1986), health promotion is 'the process of enabling people to increase control over, and to improve, their health' (Box 1) [1]. It adopts a comprehensive and positive view of health, considering physical, mental and social wellbeing. Health promotion interventions seek to improve the health and wellbeing of individuals or populations.

Health promotion theory proposes five action areas that closely align to the social ecological framework of health:

1. Building healthy public policy;
2. Creating supportive environments for health;
3. Strengthening community action;
4. Developing personal skills; and
5. Reorienting health services [1].

Health promotion interventions typically fall into five areas on a continuum from the individual to the population level, depicted in Figure 4. Quality integrated health promotion ideally involves a mix of interventions working across the continuum [262].

Box 1 Definition of health promotion according to the Ottawa charter (1986)

Health promotion is '……the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social wellbeing, an individual or group must be able to identify and to realise aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasising social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy lifestyles to wellbeing.'

Figure 4 Categories of health promotion interventions

Individual focus ←				→ Population focus
Screening, individual risk assessment, immunisation	Health education and skill development	Social marketing Health Information	Community action	Settings and supportive environments

Adapted from [262]

1.5.3 Application to thesis

When developing health interventions, theory can be applied to formative research in the following ways: to help define a health problem, needs and priorities, such as identifying which health behaviours are most amenable to change; to explore determinants of a health behaviour and identify processes by which change might occur; to inform decisions on timing of interventions to maximise effectiveness; to assess key variables in a population and setting to determine whether an intervention that worked in a previous setting will be transferable to a new context [240]. During program implementation and evaluation, theory can also be used to define appropriate indicators and consider why an intervention has or has not been successful [240]. The applications of common health behaviour theories to HIV prevention research and interventions are summarised in Table 5.

By definition, theories use generic and abstract constructs that can be adapted to diverse behaviours, problems and contexts. However, the relative importance of various constructs can differ between behaviours and populations [245, 263] and certain theories are more appropriate to certain behaviours or units of change (individual, groups, communities) [239, 246]. Choosing an appropriate theory is often problematic [246, 248]. Researchers or interventionists frequently consider more than one

theory, particularly for multifaceted interventions [244, 263, 264], and the integration of theories is promoted by some behavioural specialists [245].

In the research described in this thesis, health behaviour theories were primarily used to inform lines of enquiry in qualitative research. Incorporating theoretical constructs into qualitative enquiry helped to assess local factors among behaviourally bisexual men affecting behaviour, risk and readiness for behaviour change. Theoretical grounding also facilitated a more efficient line of questioning in order to limit respondent fatigue and maximise relevance to project aims. Explanatory and change theories were amalgamated to determine key points important for understanding the context of sexual risk behaviour among behaviourally bisexual men in Laos and conditions needed to promote positive behaviour change. These included: knowledge of HIV and STIs, risk perception, attitudes and health beliefs, perceived seriousness of HIV and STIs, self-efficacy, peer influences, social support, social and cultural norms, and environmental constraints.

Table 5 Selected health behaviour theories and applications to research and prevention programs

Theory or model	Behavioural determinants	Application to research	Application to programs
Health belief model	Perceived susceptibility Perceived severity Perceived benefits Perceived barriers Cues to action Self-efficacy	Assess health beliefs, risk perception, and beliefs about the benefits and barriers to behaviour change	Design health promotion messages Increase level of risk perception Influence beliefs of severity Convey the benefits of changing behaviour Build skills and confidence to carry out behaviour Develop reminder systems
Theory of planned behaviour	Attitudes Subjective norms Perceived behavioural control Behavioural intentions	Assess health beliefs, social norms, and perceived barriers. Identify influential persons and significant others	Convey the benefits of changing behaviour Influence social norms Engage influential leaders and significant others
Transtheoretical model	Pre-contemplation Contemplation Preparation Action Maintenance	Assess self-efficacy, intentions, perceived benefits, and potential barriers	Increase awareness of the health problems Convey the benefits of changing behaviour Develop self-efficacy Assist with problem solving
Diffusion of innovation theory	Relative advantage Compatibility Simplicity Trialability Observability	Determine influential people and effective communication channels, assess type of social networks in community Identify characteristics of people in different adopter categories	Train popular opinion leaders to advocate behaviour change Demonstrate the advantage of the innovation Ensure interventions or actions required are simple Demonstrate use of the innovation Develop social support
Social cognitive theory	Observational learning Outcome expectations Self-efficacy Environmental factors	Assess personal beliefs, motivations underlying behaviour, skills, attitudes towards behaviour, social norms, and peer influences	Influence social norms Engage influential leaders and peers as role models Emphasise tangible benefits and consequences of behaviours Develop self-efficacy and skills to implement behaviour change

Adapted from King (1999) **[239, 241, 244]**

1.6 Thesis overview

1.6.1 Thesis rationale

This literature review has established that MSM in Asia are disproportionately infected with HIV and a priority population for HIV control. However, little is known about men who have sex with men and women; that is, behaviourally bisexual men. MSM in Asia commonly also report female partners and these men differ from other MSM, both within Asia and globally, in terms of sexual practices and identity. There are emerging reports in Asia and internationally suggesting that bisexual and non-gay-identifying MSM have reduced access to HIV prevention interventions, information and health services.

Although Laos has a less established HIV epidemic than its regional neighbours, its location, increased population mobility, internal and external labour migration and widespread reports of sexual risk behaviour among key populations suggest that there is potential for HIV to increase, and vigilance is warranted [137, 158]. Prevalence of STIs is exceptionally high among FSWs, kathoey and MSM in Laos, which has implications for the transmission of HIV.

The existing low-level HIV epidemic in Laos represents an opportunity to act to prevent duplication of the trajectories of neighbouring countries; HIV prevalence in reproductive-aged adults is less than 1%, and only one study has reported prevalence greater than 5% in a key population (5.6% among MSM in 2007) [48]. Multiple studies in Laos have indicated the diversity of sexual identity among MSM in Laos, as well as discordance between identity and behaviour. Many MSM also have sex with women, and the female partners of MSM are at increased risk of HIV and STIs. Current HIV interventions are mainly targeted to kathoey and gay-identified men, and it is not clear how well these interventions are reaching the substantial subgroup of MSM who have sex with women and who identify as heterosexual. Overall uptake of HIV testing appears very low in MSM. Available data on HIV among male-identified MSM in Laos is outdated, and there are no detailed data on behaviourally bisexual men in Laos.

This thesis addresses the need for dedicated research to better understand sexual risk and health needs for behaviourally bisexual men in Laos. An improved understanding of the interplay between self-identity, behaviour and sexual networking among men who have sex with both men and women, as well as the motivations, influences, and moderators of behaviour and health-care seeking, will assist public health practitioners in providing tailored sexual health promotion and HIV prevention services for these men and their partners.

1.6.2 Thesis aims

The aims of this research were (1) to explore the social, cultural and structural contexts of sexual risk behaviour among bisexual men in Laos, and (2) informed by this work, identify practical opportunities to reduce sexual risk and improve related health outcomes.

Specific objectives of the research were:

1. To determine the comparative risk of HIV and STIs in behaviourally bisexual men compared to homosexual men in Asia;
2. To develop a comprehensive understanding of the characteristics, identity, and sexual practices of bisexual men in Laos;
3. To identify risk and protective behaviours for HIV and STI transmission of bisexual men in Laos;
4. To determine individual, social, cultural and structural influences on sexual risk of bisexual men in Laos;
5. To assess the determinants of sexual healthcare access and utilisation of bisexual men in Laos; and
6. To describe opportunities to engage bisexual men in HIV prevention and sexual health services in Laos.

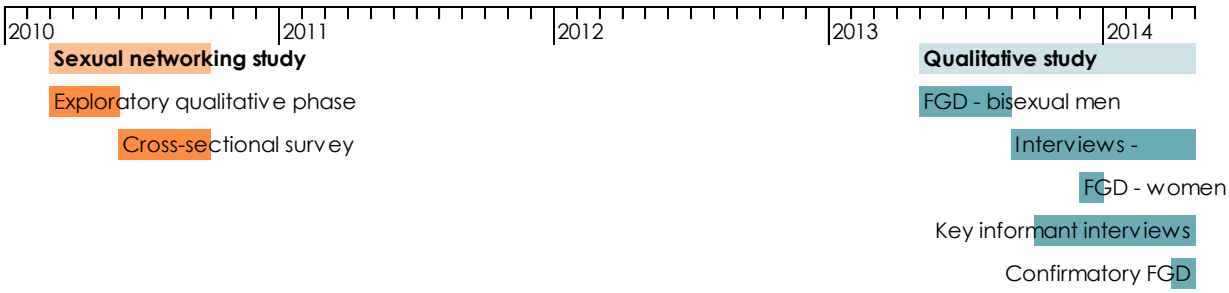
1.6.3 Methodology

Research overview

The research informing this thesis was conducted in two phases using a mixed-methods approach.

The first phase entailed secondary data analysis of quantitative data from a cross-sectional behavioural survey collected using social network design in 2010 (**Figure 5**), titled: *Exploring the sexual networks of men who have sex with men and women in Lao PDR*. It is referred to hereafter as the 'sexual networking study'. The aims of this research were to describe and model the sexual networks of behaviourally bisexual men in Vientiane, Laos and to assess the risk for HIV transmission from behaviourally bisexual men to their sex partners.

Figure 5 Timeline of data collection for sexual networking study and qualitative study



The second phase involved primary data collection and analysis of qualitative data collected in a follow-up study in 2013–2014 (**Figure 5**), henceforth referred to as the 'qualitative study'. The qualitative study explored the individual and sociocultural motivations, influences, and moderators of behaviour and health-care seeking among behaviourally bisexual men in Vientiane, Laos.

The research methods of the sexual networking study and qualitative study are outlined below. Analytical methods are outlined in specific chapters.

Sexual Networking study

This research was conducted to explore the sexual networks of men who have sex with both men and women in Vientiane, Lao PDR and Hanoi, Vietnam. Similar methodology was used in both research locations, but this section focuses on research methods applied in Vientiane.

Study participants

The study population was behaviourally bisexual men and their sexual partners, including men, kathoey and women. All study participants were required to be aged at least 18 years, able to communicate in Lao, and not be a peer researcher.

Recruitment

Study participants were recruited using enhanced snowball sampling. Snowball sampling involves initially identifying a small number of individuals from the target population, who are referred to as 'seeds' [166]. After providing the desired data, seeds are asked to help identify other members of the target population, referred to as 'nodes'. Nodes subsequently help to identify further individuals. Recruitment continues in waves until the target sample size is met. Recruitment for this study applied some techniques associated with respondent driven sampling and is hence termed as enhanced snowball sampling [166]; the number of referrals permitted by each participant was restricted to five. This limits the influence that the characteristics of the initial participants have on the composition of the final sample.

Recruitment began with ten seeds who were behaviourally bisexual men. Eligibility criteria for seeds were: aged at least 18 years; reported anal or vaginal sex with both men and women in the previous 12 months; Lao national; lived in Vientiane for at least 12 months; able to communicate in Lao language; not intoxicated by drugs or alcohol at the time of interview; and not a peer researcher. Seeds were purposively selected from a variety of locations where bisexual men socialised in Vientiane, identified in former mapping exercises, and intentionally included seeds with diverse attributes, such as sexual identity, education, and number of sex partners.

In the next wave of recruitment, seeds nominated up to five of their sexual partners ('nodes'), who subsequently referred up to five of their own sexual partners. Nodes were required to have had oral, anal or vaginal sex with a seed or node participant in the previous 12 months. Snowball sampling was followed for two to three waves of recruitment.

Data collection

Recruitment and data collection was carried out by six trained peer researchers between June and October 2010. Peer researchers explained the study to participants, collected informed verbal consent and determined eligibility. Eligible participants self-completed a behavioural questionnaire administered on a hand-held computer (personal digital assistant; PDA) in Lao language; a peer researcher was always present and able to answer questions. The questionnaire took approximately 30 minutes to complete.

The questionnaire covered demographic information, sexual orientation, information on lifetime and past year sexual partners, condom use, alcohol and drug use, and HIV knowledge (Appendix D). A modified version of the questionnaire was used for female participants, which collected less detailed information on sexual behaviour. In addition, women were not told the full purpose of the study in order to prevent inadvertently disclosing their partner's bisexual behaviour.

After completing the questionnaire participants nominated sexual partners for recruitment into the study and provided a nickname and contact details; these individuals were subsequently invited to participate in the study.

Participants who were nominated and recruited more than once did not recomplete the questionnaire, but these links are reflected in the sexual network diagram. Participants were reimbursed the equivalent of approximately US$2.50 at first participation, and approximately US$1.90 for each subsequent nomination.

The questionnaire was informed by a prior exploratory qualitative phase which is not further described. Questions were developed in English and translated into Lao. The final questionnaire was programmed onto the PDAs using Microsoft Visual Basic Studio in both English and Lao script.

Measurement

Gender was self-described by participants as female, male or kathoey. Sexual orientation of male participants was measured using the Kinsey Scale [90], described in section 1.2.1. Information on number type of sex, and condom use with past year sexual partners was obtained separately for different partner types (regular, casual, paid, paying and foreign) and partner genders (male, female, kathoey). See Appendix D for the full questionnaire administered to men and kathoey participants.

In all analyses based on the sexual networking study, behaviourally bisexual men are defined as male participants who reported anal sex with male and/or kathoey partners and vaginal or anal sex with female sex partners in their lifetime.

Sample size and recruitment outcomes

Precise power calculations for sample size estimation are not possible in network modelling because each observation is not independent, the number of observations is a non-linear function of sample size and the design effect needed to estimate sample size can only be calculated post-hoc [265]. Based on prior experience the target sample size was 270.

Overall, including seeds 342 sexual partners were nominated through snowball sampling, and 298 (87%) individuals participated in the behavioural survey. The sample population included 189 males, 84 women and 25 kathoey. Of participating males, 181 (96%) had complete information on lifetime partners. Of these men, 88 (49%) were classified as behaviourally bisexual and are included in subsequent analyses. See Appendix A-5 for further details on participant characteristics and the sexual networks of behaviourally bisexual men.

Ethics

Ethical approval was obtained from the ethical review committees of the Alfred Hospital and Australian National University, Australia; and the University of Health Sciences, and the National Ethics Committee for Health Research, Laos.

Follow-up qualitative study

Study participants

There were three groups of study participants in the qualitative study: behaviourally bisexual men, women, and key informants.

The primary study participants were behaviourally bisexual men, who were required to be aged at least 18 years, currently residing in Vientiane Capital, and report bisexual behaviour in their lifetime (defined as reporting ever having anal or oral sex with men and/or male-to-female transgenders, and reporting ever having vaginal or anal sex with women). Bisexual men were ineligible if they were a peer educator (eligible as key informant).

Women from the general population were recruited in order to explore awareness of bisexual behaviour in some men, perception of social norms, and experience and attitudes around sex and relationships in Laos. This information helps to describe the sociocultural context of bisexual men's behaviour in Laos. There were no criteria regarding the sexuality or sexual experience of female participants. Women were required to be aged 18 years or older and currently residing in Vientiane Capital.

Key informants ('key experts') were individuals working or volunteering in an organisation, government department, or health service in the field of HIV, sexual health, or MSM. There were no criteria imposed on length of experience in the field or position.

Recruitment

Participant recruitment took place from May 2013–April 2014. Data collection was staged as an iterative process, with time in-between each stage allowing for translation and preliminary analysis, such that initial FGDs informed later interviews (Figure 5).

Behaviourally bisexual men

Recruitment of bisexual men was carried out by three trained peer recruiters who were all male, MSM, and had previously worked as peer researchers and/or peer educators for HIV prevention programs targeting MSM.

Bisexual men were recruited from bars, clubs, dormitories (live-in accommodation for universities and colleges), a sauna and through peer referral in Vientiane through a combination of purposive and convenience sampling. Peer recruiters devised a list of potential venues and assigned a rough schedule; recruitment at entertainment venues was scheduled for both weeknights and weekends. On a given night, two recruiters attended two to three venues located in a similar area from approximately 8–

11pm. Recruitment from dormitories occurred midweek. Recruiters attended each venue for one to three hours. Informal recruitment was carried about through personal networks of participants and peer recruiters.

Peer recruiters used a variety of techniques to identify potential participants, such as observing behaviour of patrons and making conversation with patrons. If they thought a man might be suitable for the study, then they introduced the study and invited men to participate. Recruiters recorded a nickname, phone number, age, availability and preferred time of potential participants and gave participants an invitation card which briefly described the study, provided contact details and included a map of the Burnet Institute Laos office.

The following working day potential participants were phoned to confirm eligibility and willingness to participate. When enough people had signed up for a given time, the date and time was confirmed by phone call. Up to twelve participants were scheduled for any FGD to allow for no-shows and cancellations, aiming for 6–8 participants in each group.

Participants were eligible to participate in more than one stage of data collection, such as a FGD and interview. Participants were asked their willingness to be recontacted for future interviews at the time of initial participation and provided contact details. These individuals were later invited to participate in an interview or confirmatory FGD; because no identifying information was collected, these are viewed as separate responses.

Women

Women were recruited by two Lao-national females working for Burnet Institute Laos. Three locations were chosen for recruitment in order to recruit women from a variety of income, education, and social levels: a *hi-so* (literally 'high-society') nightclub; a garment factory; and the National University of Laos, Faculty of Education and Faculty of Business Management.

Recruitment from the nightclub took place on a single Saturday night from 9–11pm and followed a similar procedure as for the male participants. The study was described to women as a study looking at women's perspectives on relationships, sexual behaviour, and social norms and expectations.

A letter of request was sent to the garment factory and the National University introducing the researchers, outlining the purpose of the study and requesting permission to recruit 6–8 women from the garment factory and each of the two nominated university faculties. The contact persons helped to identify participants in each setting.

Key informants

Key personnel and organisations with programs or services relating to HIV, sexual health, or targeting MSM were identified through professional networks of Burnet Institute Laos. A letter of invitation was sent directly to individuals if a contact was already established or alternatively to the head of organisation. In some organisations, more than one person was invited, such as a peer educator and program manager.

Procedures

A combination of FGDs and semi-structured interviews were used to collect qualitative data:

- Bisexual men participated in FGDs, semi-structured in-depth interviews and confirmatory FGDs;
- Women participated in FGDs organised by place of recruitment. FGDs with women sought female perspectives on sex, sexuality and social norms; and
- Key informants participated in semi-structured, in-depth interviews.

Informed verbal consent was obtained for all participating bisexual men and women and no identifying information was recorded. Verbal consent was used based on previous experience, which found participants were more accepting and comfortable with this format, and to preserve anonymity. Informed written consent was required for key informant interviews. Data were de-identified, and in all reports key informants are only referred to by the type of organisation and position they hold. All participants were given a hard-copy of the relevant participant and information form to keep. Consent included permission to audio-record all FGDs and interviews.

All participating bisexual men and women were reimbursed 50,000 kip (approximately US$6) for expenses incurred and given condoms, lubricant and brochures on sexual health, HIV and available healthcare services.

Focus group discussions

FGDs with bisexual men were facilitated by a Lao-national male in Lao-language. All FGDs were held at the Burnet Institute office, lasted 1–2 hours, and were supported by a note-taker. Prior to commencing FGDs, each participant was given a form with questions on age, education, living arrangements and sexuality. Sexuality was asked first as an open-ended question and then asked again according to the Kinsey scale [90].

The facilitator followed a question guide (Appendix E-1) to steer discussion. The questions explored sexual decision-making, barriers and facilitators of condom use, sources and access to information on health, sex and sexuality, social norms, and extent of affiliation and participation within sexual communities/subcultures and peer groups. In order to depersonalise sensitive data, participants were instructed that they did not have to speak about personal experience; the questions were broad and asked about what they know, think or have heard from other people.

FGDs with women were facilitated by one of two Lao-national female researchers; a notetaker was present except for the two FGDs at the National University (Appendix E-3). FGDs with women followed the same process as for men. The FGD with women from the garment factory and National University were held at site of recruitment while the FGD with women recruited from a nightclub was held at the Burnet Institute Lao office; FGDs lasted 1–1.5 hours.

The confirmatory FGD was held in Lao and facilitated by a Lao-national male without a notetaker. The facilitator presented main findings from the prior FGDs and interviews and sought participants' interpretation, agreement and clarification of unclear or incomplete findings.

Within two days of each FGD, the notetakers were responsible for writing out their notes and any adding missed detail from the audio recording. With the exception of the confirmatory FGD and FGDs with women, which were transcribed due to lack of notetaker, FGDs were not transcribed word-for-word but key quotes were included verbatim.

Semi-structured interviews with participants

Semi-structured, in-depth interviews with bisexual men were led by one interviewer, a Lao-national male, in Lao language, and lasted 1.5–2 hours. Participant age and sexuality, based on an open-ended question, were recorded. The interviewer followed a question guide (Appendix D-2). Compared to FGDs, interviewers sought more detailed personal information about participants' sexual experiences and beliefs, including details pertaining to specific episodes of sexual relations and risk-taking with men, kathoey and women, use of health services, testing history, sources of sexual health information, and desired characteristic of sexual health services. Interviews were transcribed word-for-word from the audio recording.

Key informant interviews

Key informants from the health, community and government sector had the choice of being interviewed in Lao or English about their involvement in the field and their personal opinions on the HIV situation in Laos in relation to MSM and bisexual men, particularly prevention programs aimed at this group of men and their access to health services. Interviews were in-depth and semi-structured (Appendix E-4). The project coordinator led all interviews in English and was supported by a Lao-national. For participants electing to be interviewed in Lao, questions and responses were translated in real time by the Lao-facilitator. Interviews ran for 1–2 hours and were held in a location of the KI's choice, which in all cases was their workplace. All interviews were transcribed verbatim in English from the audio recording.

Analytical strategy

Preliminary analysis was conducted throughout data collection and recruitment was concluded when new issues stopped emerging ('data saturation').

FGD notes and interview transcripts were translated from Lao to English. The initial FGDs with bisexual men were translated by the facilitator. Subsequent FGDs and interviews were translated by an independent translator who has worked in the field and was thus familiar with the type of language used regarding sex and sexuality. Translations were amended in consultation with the bilingual facilitator to improve readability.

Translated data were imported into QSR International's NVivo 10 qualitative data analysis software (2012) for management and analysis. Thematic analysis was used to generate a series of themes and sub-themes. Coding was undertaken by one researcher (PhD candidate). Open coding was first undertaken to assign labels to sections of data based on evident concepts and categories. As the analysis progressed the coding framework was refined and organised through an iterative process by considering the relationship between themes (axial coding).

Data validation

Following preliminary analysis, researcher interpretation and themes were validated by presenting findings to bisexual men through a confirmatory FGD and holding a workshop with key stakeholders, with opportunity for feedback. Bisexual men and key stakeholders endorsed the findings and no substantial changes to interpretation resulted from feedback provided.

Recruitment outcomes

Participant numbers are summarised in **Table 6**. In total, 31 BBM, 22 women, and 14 key experts participated in the study. Numbers attending FGDs for bisexual men (3–7) and women (3–8) were smaller than anticipated due to a large number of last minute cancellations and no-shows.

Table 6 Participant numbers from the qualitative study

Type	Participants	Number	
		Units	Individuals
Focus groups	Bisexual men	4	21
Focus groups	Women	4	22
Interviews	Bisexual men	11	11*^
Key informant interviews	Key informants	13#	14
Confirmatory focus groups	Bisexual men	1	3+

* Includes 2 repeat participants from FGDs

^ At the time of interview one participant reported only homosexual behaviour and one participant reported only heterosexual behaviour; results are retained as outliers.

One interview conducted as a group interview with two peer educators.

\+ Includes 1 repeat participant from FGD and interview, and 1 repeat participant from interview.

Ethics

The qualitative study was approved by the ethics committees of the Alfred Hospital, Monash University, and University of Health Sciences.

1.6.4 Thesis outline

The body of this thesis consists of eight chapters, including this introductory chapter (Chapter One). Chapter 2 presents a systematic review and Chapters 3 to 7 are based on original research. The final chapter offers an integrated discussion of the research.

Chapter 2

Chapter 2 reports on a systematic review of HIV and sexual risk among behaviourally bisexual (men who have sex with men and women; MSMW) compared to behaviourally homosexual men (men who have sex with men only; MSMO) in Asia. Five separate meta-analyses are incorporated, addressing the prevalence of bisexual behaviour among MSM; and the prevalence of HIV; STIs; unprotected sex; and HIV testing in MSMW compared to MSMO. This manuscript has been accepted for publication in *AIDS and Behavior*.

Chapter 3

Chapter 3 examines the association between sexual identity and risk among behaviourally bisexual men in Vientiane. This work is the first of three chapters using data from the sexual networking study. The manuscript presented in this chapter compares past-year sexual behaviour between heterosexual-identifying and other bisexual men according to condom use, number of sex partners, and type of partners. This manuscript is published in *AIDS Education and Prevention*.

Chapter 4

Chapter 4 explores settings for meeting sex partners and associated risk among behaviourally bisexual men in Vientiane. This work is the second of three chapters using data from the sexual networking study. The manuscript presented in this chapter assesses settings where bisexual men report meeting their sex partners, the association between settings and risky sexual behaviour, and opportunities for health promotion. This manuscript is published in *AIDS Education and Prevention*.

Chapter 5

Chapter 5 explores the occurrence of transactional sex among behaviourally bisexual men in Vientiane, considering the direction of payment, gender of partner, and condom use. This work is the final chapter using data from the sexual networking study. The manuscript presented in this chapter describes reports of buying sex, selling sex, and both buying and selling sex among behaviourally bisexual men and considers male, female, and kathoey sex partners. This manuscript is published in *Sexual Health*.

Chapter 6

Chapter 6 explores qualitative accounts of transactional sex among behaviourally bisexual men in Vientiane. It is the first of two chapters based on the qualitative study. The manuscript presented in this chapter discusses the complexities of transactional sex in this population in order to better understand the context, motivations, and associated sexual risk. This manuscript has been accepted for publication in *Archives of Sexual Behavior*.

Chapter 7

Chapter 7 examines the health-care seeking behaviours of behaviourally bisexual men in Laos and determinants of access to HIV and sexual health services. It is the second chapter based of the extended qualitative phase. The manuscript presented in this chapter discusses common barriers to accessing sexual health care and implications for HIV and sexual health services in Laos. This manuscript has been published in the *Asia-Pacific Journal of Public Health*.

Chapter 8

Chapter 8 presents an integrated discussion of the research which makes up the thesis. It collates the key findings from the quantitative and qualitative studies in order to describe both the prevalence and

influences on risk behaviour among behaviourally bisexual men. It explores the implications of these research findings on public health practice, identifies ongoing research priorities, and discusses the strengths and limitations of the research.

Chapter Two

2 . HIV and sexual risk in bisexual men in Asia: a systematic review

The literature review presented in Chapter 1 demonstrated that MSM are a key population for HIV prevention and control in Asia: they are disproportionately infected with HIV compared to the general population and have been largely neglected in national responses to HIV in the region. While HIV has stabilised at a regional level, including among other key populations, increases in HIV infection among MSM have been recorded in many settings.

In Asia, many MSM also have sex with women, which may be in part due to sociocultural norms and stigmatisation. Research suggests that men who have sex with men and women (MSMW) and men who have sex with men only (MSMO) differ in terms of sexual behaviour and identity, but studies focusing on MSMW are limited. In Asia it is not clear how bisexual behaviour affects men's risk of HIV and other STIs.

The systematic review and meta-analysis presented in this chapter provides the first detailed comparison of HIV and sexual risk between MSMW and MSMO in Asia. Based on 55 identified studies, prevalence of HIV and STIs is high in these populations and similar between MSMW and MSMO. However, MSMW are significantly less likely than MSMO to report a prior HIV test. A substantial proportion of MSM in Asia are bisexual, and targeted interventions are needed to increase engagement of MSMW in HIV prevention and testing services. This research highlights behaviourally bisexual men as an important subgroup of MSM, and further research is needed understand their health needs and inform interventions.

This paper presented in this chapter has been accepted for publication.

> Bowring AL, Veronese V, Doyle JS, Stoove M, Hellard M. HIV and sexual risk among men who have sex with men and women in Asia: a systematic review and meta-analysis. *AIDS Behav*. Forthcoming 2016.

Declaration for Thesis Chapter Two

MONASH UNIVERSITY
Declaration by candidate

In the case of Chapter 2, the nature and extent of my contribution to the work was the following:

Nature of contribution	**Extent of contribution (%)**
Study design, data collection and analysis, results interpretation, manuscript preparation and review	75%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	**Nature of contribution**	**Extent of contribution (%) ***
Vanessa Veronese	Data collection and analysis, manuscript review	10%
Joseph S Doyle	Data analysis, results interpretation, manuscript review	N/A
Mark Stoove	Study design, result interpretation, manuscript preparation and review	N/A
Margaret Hellard	Study design, result interpretation, manuscript preparation and review	N/A

* For student co-authors only

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work.

Candidate's Signature	[redacted]	**Date** 11/9/2015
Main Supervisor's Signature	[redacted]	**Date** 11/9/2015

HIV and sexual risk among men who have sex with men and women in Asia: a systematic review and meta-analysis

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2.1 Abstract

We performed a systematic review to estimate the proportion of men who have sex with men (MSM) in Asia who are bisexual and compare prevalence of HIV and sexual risk between men who have sex with men and women (MSMW) and men who have sex with men only (MSMO). Forty-eight articles based on 55 unique samples were identified from nine countries in Asia. Bisexual behaviour was common among MSM (pooled prevalence 32.8%). Prevalence of HIV (pooled OR = 0.90; 95%CI 0.77–1.05), recent syphilis infection (pooled OR = 0.99; 95%CI 0.93–1.06), and unprotected anal intercourse (pooled OR = 0.80; 95%CI 0.57–1.11) was similar between MSMW and MSMO, but heterogeneity was high. MSMW had lower odds of reporting a prior HIV test than MSMO (OR = 0.82; 95%CI 0.70–0.95; $p = 0.01$, $I^2 = 0\%$). Targeted interventions are needed to increase uptake of HIV testing among MSMW. Increased reporting of disaggregated data in surveillance and research will help improve understanding of risk in MSMW and inform targeted interventions.

2.2 Introduction

In Asia, men who have sex with men (MSM) are disproportionately affected by HIV compared to all reproductive-aged adults and are a key population for HIV prevention and control [13, 25]. MSM do not constitute a homogenous population, and men who have sex with men and women (MSMW) may be an important subgroup to consider in research and interventions, particularly in Asia where specific gender and sexual identity social and cultural norms exist [10, 42].

Although most countries in Asia maintain very low (<0.1%) to low (<1%) HIV prevalence in the general population [25], high infection levels – upward of five and ten per cent prevalence – have been reported among MSM in cities in Cambodia, Thailand, China, Indonesia, Myanmar, Taiwan, and Vietnam [32]. MSM in Asia commonly report high risk behaviours for HIV and sexually transmitted

infections (STIs), such as unprotected anal intercourse, multiple sex partners, transactional sex and substance use [14, 27, 51, 84]. Of concern, the number and rate of new cases of HIV observed among MSM continues to increase in many countries [13, 19, 32], and access to HIV prevention programs, HIV testing and sexual health services remains low [32, 266].

MSM is an epidemiological term used to classify men based on behaviour rather than identity, grounded in the assumption that behaviour is associated with HIV and STI risk [117, 267]. In Asia, MSM include a diverse group of men who do not necessarily identify as gay, bisexual, homosexual or their cultural equivalents and who vary in their disclosure and openness of their behaviour [10]. It is increasingly recognised that grouping MSM may obscure differences in behaviour, risk and health needs, and disaggregation is needed to identify subgroups at highest risk and tailor interventions [268].

Consistent with the diverse sociocultural and behavioural contexts of sexuality, many MSM in Asia also have sex with women [14]. As well as sexual preference, MSM choosing to have sex with women may be influenced by stigma and sociocultural heteronormative pressures to have a girlfriend or wife [10, 123, 124]. These factors may also influence sexual risk practices, and the potential for MSMW to act as a bridging population between high-risk groups and the general population is frequently cited, although empirical evidence of this is lacking [122, 269-274]. There is concern that MSMW may not be adequately reached by sexual health and HIV prevention initiatives targeting MSM due to not identifying with the target group, low risk perception, reluctance to disclose behaviour and lack of community connectedness [4, 10, 42, 78, 82, 275].

It is widely recognised that MSMW and MSM-only (MSMO) often differ in terms of behaviour and identity [10, 42], and it is anticipated that their risk of HIV and STIs may subsequently be different. In the United States (US), a meta-analysis found that the odds of testing HIV positive were less than half in MSMW compared to MSMO (OR 0.41; 95%CI 0.31–0.54), which was largely attributed to less frequent engagement in unprotected receptive anal intercourse among MSMW [276]. However, it is not known how applicable these findings are to the diverse contexts of Asia given the differences in social and cultural norms influencing sexuality, marriage and sexual behaviour [10, 42].

To help target HIV interventions and sexual health promotion, it is important to better understand MSMW and MSMO in the Asian context, including their relative risk of acquiring and transmitting HIV and others STIs. We aim to systematically review the evidence of HIV and STI risk in MSMW in Asia by:

1. Estimating the prevalence of bisexual behaviour among MSM in Asia; and
2. Estimating the risk of HIV and STI acquisition among MSMW compared to MSMO in Asia, by comparing the reported prevalence of HIV, STIs, and unprotected anal sex.

2.3 Methods

2.3.1 Protocol and registration

This systematic review and meta-analysis was undertaken in accordance with the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) guidelines [277] for reporting of systematic reviews. The review protocol was registered with PROSPERO (2015: CRD42015014396).

2.3.2 Search strategy

The search strategy aimed to identify both published and unpublished studies. AB performed systematic searches of electronic databases using OVID Medline, PsychINFO, CINAHL and EMBASE. The search for unpublished studies included conference abstracts for the International AIDS Conference, International AIDS Society (IAS) Conference and ISSTDR conferences indexed in electronic depositories [278, 279]. Additionally, UNAIDS country progress reports were reviewed for unpublished reports and data. Reference lists of relevant papers and reviews were assessed for additional papers [280]. The search was limited to English-language articles published between January 1, 2000 and January 8, 2015.

Search syntax included a combination of medical subject heading (MESH) terms and free text (see Supplementary Table 1) reflecting the following categories:

1. Bisexual variables ('bisexuality', 'MSM', 'homosexuality');
2. HIV and STI risk variables ('HIV infections', 'STI infections', 'sexual behaviour', 'unsafe sex', 'condom use', 'unprotected sex', 'condomless'); and
3. Region restrictions (Asia, regions of Asia, or any included Asian country).

Authors were contacted up to two times if further information or clarification of study eligibility was required. In total 38 authors were contacted, of whom 17 (45%) responded.

2.3.3 Study selection

Study population and outcomes

The study population was men who have sex with men in Asia, including men who have sex with men and women (MSMW; behaviourally bisexual) and men who have sex with men only (MSMO; behaviourally homosexual).

Three primary measures of risk-taking were assessed:

1. HIV prevalence, based on biological measures of HIV, with no restrictions on type of HIV testing;
2. The prevalence of STIs, defined as microbiologically or serologically confirmed current STI infection with chlamydia, gonorrhoea or recent syphilis infection; and

3. Unprotected anal intercourse (UAI), defined as any measure of self-reported inconsistent condom use or non-condom use at last sex during anal sex, sex with male partners, or any inconsistent condom use. For meta-analysis, various definitions of UAI (e.g. any UAI, UAI when selling sex, UAI with casual partner) were combined into a single measure, using the measure with the highest proportion UAI where multiple measures were reported.

Two secondary outcomes were also assessed:

1. Prevalence of bisexual behaviour among men who have sex with men, defined by sexual behaviour as sex with women and with men and/or male-to-female transgender people, with no limits on recall period or behaviour (this definition was also used to disaggregate the primary outcomes); and
2. HIV testing history, defined as the proportion reporting a prior HIV test (ever or past year).

Eligibility criteria

Studies involving men with bisexual behaviour in Asia were included if they included at least one primary outcome stratified by bisexual behaviour (MSMW/MSMO).

We defined Asia based on the UN classification of Eastern Asia, Southern Asia, and South-Eastern Asia (http://unstats.un.org/unsd/methods/m49/m49regin.htm). Observational studies and intervention studies, where pre-intervention or control measures were reported, were eligible.

Studies were excluded if they: defined bisexuality by self-identified sexual orientation or marriage (i.e., not bisexual behaviour); exclusively targeted male sex workers, “money boys”, transgender people, people who inject drugs, or HIV positive men; or were based on Asian-born men in non-Asia settings. Excluding studies focusing on people with other high-risk behaviours for HIV was done to limit heterogeneity in risk.

2.3.4 Data extraction and coding

Study eligibility was assessed independently by two investigators (AB and VV). Search results were first screened based on the abstract only and full-text articles obtained for any articles referring to MSM and a primary outcome (Figure 6). Only conference abstracts describing bisexual behaviour in the abstract were considered. Full-text articles and abstracts were subsequently screened for all eligibility criteria. Data were extracted by two independent reviewers (AB and VV) and entered into a standardised Excel spreadsheet. Any discrepancies in eligibility assessment or data extraction were resolved through discussion or a third reviewer (JD).

Data coded included: study characteristics (location, study design, sampling methodology, definition of male-to-male sex); sample size and total number of all MSM, MSMO and MSMW; bisexual recall period; description of sample of MSM (age, proportion reporting anal sex, transactional sex and injecting drug use); number of MSMW and MSMO with each reported outcome or odds ratio (OR) and 95% confidence intervals (CI); analysis information. Where not specifically reported as MSMO/MSMW in a manuscript, researchers classified bisexuality based on available evidence on

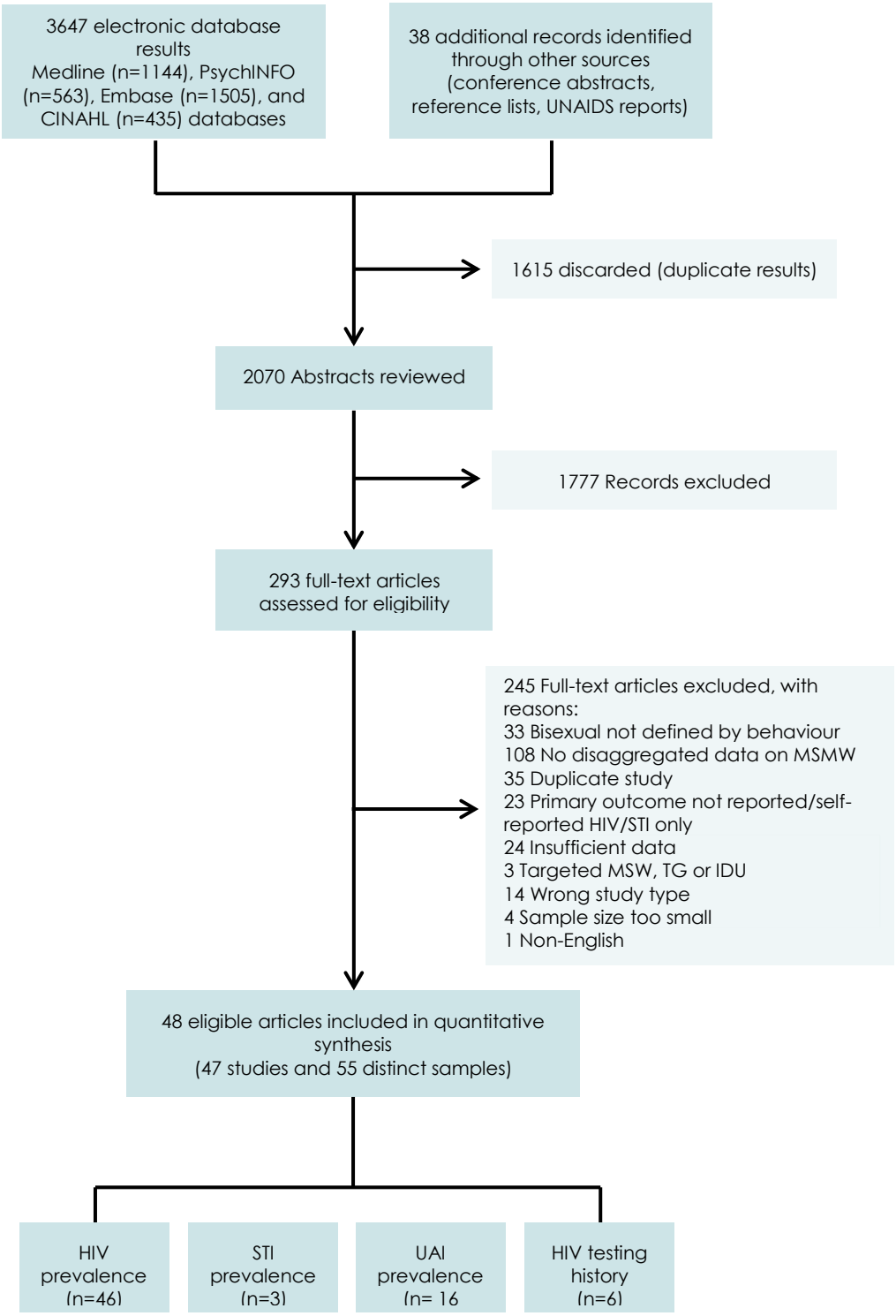
whether MSM participants also reported sex with women: MSMW categorises MSM who also report sex with a female partner and MSMO categorises MSM who report no female partners. There were no limits placed on recall period of bisexual behaviour, but where data were available for multiple periods (e.g. past six months and lifetime), the shorter recall period was used.

Cross-sectional studies carried out in more than one year on different samples were reported separately, as has been done in previous reviews [276]. Studies carried out in more than one location or setting were reported as one study unless the results were only available stratified by setting. This was done to avoid a single study exerting greater weight in the random effects model. Only baseline data were extracted for intervention studies. For prospective studies, baseline data was preferentially used unless only endline data differentiated between MSMW and MSMO. If multiple articles based on the same sample were identified, the most comprehensive article was chosen for inclusion unless different outcomes were reported, in which case two references were given for a single study. Denominators for HIV and STI positivity excluded those whose results were indeterminate, inconclusive or unknown.

Quality appraisal

Methodological quality was assessed using the Joanna Briggs Institute Prevalence Critical Appraisal Tool [281, 282], which considers both the quality of the study methods and reporting. The tool was modified to calculate a numeric score and converted into a binary measure. Prior to assessment, the reviewers established key criteria important for this review which informed the quality scoring; for e.g., clear definition of MSM? Overall a maximum score of 11 was possible; studies scoring more than six points were classified as higher quality, and those scoring less than six points classified as lower quality.

Figure 6 Flow diagram of study selection and inclusion process



2.3.5 Data synthesis

In total, five meta-analyses were conducted based on primary and secondary outcomes: 1) Prevalence of bisexual behaviour among MSM; 2) HIV prevalence; 3) STI prevalence; 4) Unprotected sex; and 5) HIV testing history. Summary measures used were pooled prevalence in the first meta-analysis and odds ratios (OR) for the remaining meta-analyses. OR were calculated with MSMO as the reference group, whereby an OR higher than 1 indicates an increased likelihood of an outcome occurring in MSMW compared to MSMO.

DerSimonian-Laird random-effects model were used in all meta-analyses given anticipated variation in design and sampling characteristics between studies. Statistical heterogeneity was assessed using chi-squared (χ^2) and I-squared (I^2) values. When at least ten studies met the inclusion criteria, publication bias was assessed by inspecting a funnel plot [283, 284]. All analyses were conducted using Stata version 13 (College Station, TX, 2014).

OR were manually calculated unless manuscript-reported OR were available, and OR and 95% CI were first transformed to the logarithmic scale. Standard errors of logOR were calculated using Woolf's method [285]. One study reported a prevalence ratio with inadequate information to calculate OR [124]. Given prevalence was <10%, the prevalence ratio was used as a proxy for OR given that for rare outcomes, risk ratio approximates an OR [286]. Sensitivity analysis showed that this approach had no effect on the effect size or statistical significance.

Sub-group analyses through stratification were conducted to assess difference in the pooled outcomes by predetermined key study factors: study location, sampling method, recruitment setting, survey method, data collection period, sample size, background HIV prevalence level, recall window of bisexual behaviour, definition of male-to-male sex, and if transgender people were included as MSM. Background HIV prevalence was defined as HIV prevalence among adults aged 15-49, published by UNAIDS in 2013 [12], and classified as very low (<0.5%), low (0.5–1.0%), medium (1.1–5.0%) and high (>5%) [25]. Meta-regression was conducted to assess difference in the pooled outcomes by sample characteristics (age and proportion reporting transactional sex, anal sex). Sensitivity analyses were conducted to assess the impact of excluding studies from China on the effect size for HIV prevalence and heterogeneity.

2.4 Results

In total 2070 citations were identified and screened, of which 1777 were initially excluded because they did not measure a primary outcome, were the wrong study type, or were not based in Asia (Figure 6). The remaining 293 citations were subject to full review. From these, 245 articles were excluded, with the main reason being they did not provide disaggregated data on primary outcomes for MSMW and MSMO (44%). Other reasons were duplication (14%), bisexuality not based on behaviour or definition of bisexuality was ambiguous (13%), no primary outcome reported (9%), and insufficient data (10%). Insufficient data included 18 instances where authors of conference abstracts could not be contacted or

could not provide sufficient data, a study with no confidence intervals for effect size nor reporting proportion by subgroup [287], and studies where incomplete data on number of MSMW and MSMO precluded calculating an effect size [288, 289]. Only one additional study was identified from reference lists as potentially eligible but was excluded on review of full text.

Overall 48 articles met the selection criteria and were included in the systematic review. Three of these articles reported on data collected in different samples or years and are disaggregated in this review, and two articles reported different outcomes for the same study. The final dataset included 55 unique samples for which study characteristics are described in Table 7. The samples included 153,311 participants, of whom 107,823 were MSM (includes MSMW and MSMO; range 84 to 47,231; median 649). The majority of samples (89%) exclusively targeted MSM, and one sample targeted young migrant MSM. An additional two samples targeted males, two targeted clinic attendees of all genders, and one targeted MSMW. Sex between men was defined by: anal or oral sex (19 out of 55); anal, oral or manual sex (n=7); anal sex only (n=5); or not specified (n=24).

The majority of samples were based in China (64%), followed by Thailand (11%) and India (11%). Two studies came from Vietnam, and there was one study originating from each of Cambodia, Indonesia, Laos, Malaysia and the Philippines. One multinational Asian study was included.

Ninety-three per cent of included samples were cross-sectional and the remaining seven per cent (n=4) were prospective cohort studies. For consistency, the four cohort studies were treated as cross-sectional data, with three reporting on baseline data and one reporting on endline data. All samples used variations of convenience sampling, including snowball sampling (13 out of 55), respondent driven sampling (RDS; n=6), time-location sampling (n=5), consecutive sampling (n=5), convenience methods (n=23), or multiple convenience sampling methods (n=3). The majority of samples recruited participants through multiple settings (n=22), generally using combinations of MSM venues, internet and peer recruitment. The remaining samples utilised solely peer groups (n=13), MSM venues such as bars, clubs, and bathhouses (n=11), STI or VCT clinic (n=3), internet (n=3), community organisations (n=2), and the military (n=1).

2.4.1 Bisexuality among MSM

The proportion of MSM reporting bisexual behaviour was recorded from all samples (Table 7) and ranged from 7% to 86% (median 28.3%). The bisexual-recall period varied between studies: past six months (31 out of 55 samples); past 12 months (n=6); lifetime (n=8); past four months (n=1); past three months (n=3); and past month (n=2).

Overall, the pooled prevalence of bisexual behaviour among MSM was 32.8% (95%CI 28.1%–37.6%), which should be interpreted with caution due to very high heterogeneity (I^2=99.7%, heterogeneity χ^2 $p < 0.01$). The estimated prevalence of bisexual behaviour among MSM was higher with longer recall periods; estimated at 46% with lifetime recall, 49% with past year recall and 25% with past six months recall (Figure 7). Studies using consecutive sampling methods had higher estimates of bisexual behaviour among MSM (61%) compared to those using RDS (25%) or other convenience sampling methods (31%).

2.4.2 HIV prevalence

Forty-six samples with 91,480 MSM participants (median 679) reported on HIV prevalence. HIV prevalence ranged from 0.7% to 25.2% (median 7.6%) among MSMW and 0.9% to 32.1% (median 7.3%) among MSMO (Table 7). Six studies found lower HIV positivity among MSMW compared to MSMO (OR<1), four studies found higher HIV positivity among MSMW compared to MSMO (OR>1), and 36 studies found no clear difference (95%CI contains OR=1). The pooled results showed no significant difference in HIV prevalence between MSMW and MSMO (OR 0.90; 95%CI 0.77–1.05; $p = 0.17$) (Figure 8). High heterogeneity was calculated between studies (I^2=73.2%, heterogeneity χ^2 $p < 0.01$). Based on the funnel plot, there was no evidence of publication bias (Supplementary Figure 1).

Stratifying results by study characteristics and design did not significantly change the direction of the effect (Table 8). Samples based in South Asia, with larger sample sizes, data collection prior to 2006, using consecutive sampling or with medium background HIV prevalence produced a more confident effect suggesting significantly lower risk among MSMW compared to MSMO (all $p < 0.05$). Variance between studies due to heterogeneity (measured by I^2) was in part explained by region, bisexual recall period, definition of male-to-male sex and sampling method. Data collection period, method of survey administration, study quality, and inclusion of transgender people as MSM could not account for the variability between studies. Sample characteristics (age, proportion reporting anal sex with male partners, and engagement in transactional sex) did not significantly change the effect size in meta-regression (Table 8).

In sensitivity analysis, excluding China-based studies produced a more confident effect size (OR 0.68, 95%CI 0.48-0.96; $p < 0.01$) but heterogeneity remained high (I^2=72.7%; heterogeneity χ^2 $p < 0.01$).

2.4.3 Recent syphilis diagnosis

Three studies with 47,655 MSM participants (median 302) reported on recent syphilis infection, and all originated from China. No studies provided disaggregated data on other STIs. Percentage diagnosed with syphilis ranged from 11.7% to 37.7% among MSMW and 11.8% to 26.1% among MSMO (Table 7). The pooled result showed no significant difference in syphilis diagnosis between MSMW and MSMO (OR=0.99; 95%CI=0.93–1.06; $p = 0.816$), and heterogeneity was not detected (I^2=0%; heterogeneity χ^2 $p = 0.80$) (Figure 9). There were too few studies to observe publication bias.

Figure 7 Forest plot for proportion of MSM classified as MSMW

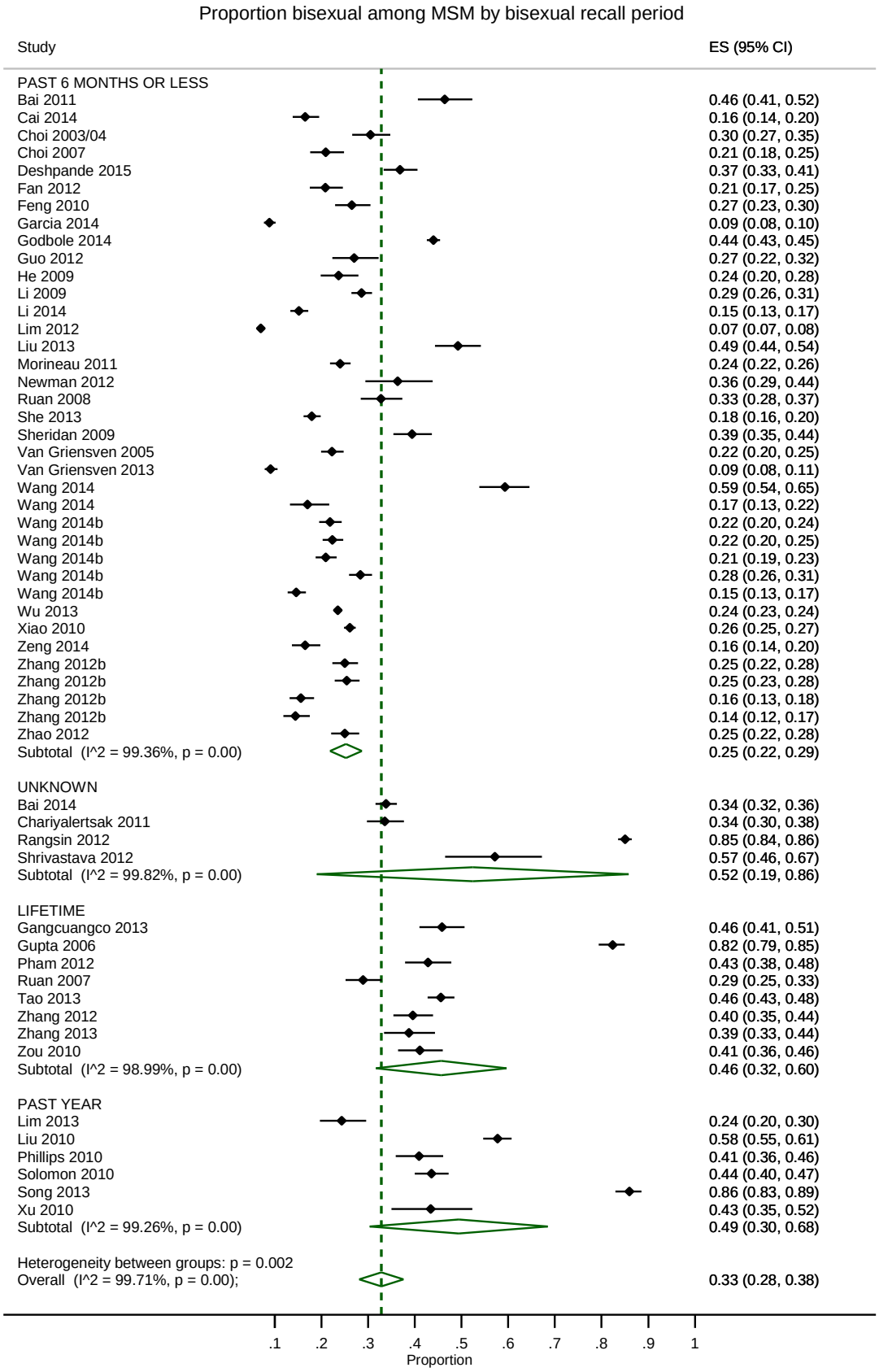


Figure 8 Forest plot for HIV positivity in MSMW compared to MSMO

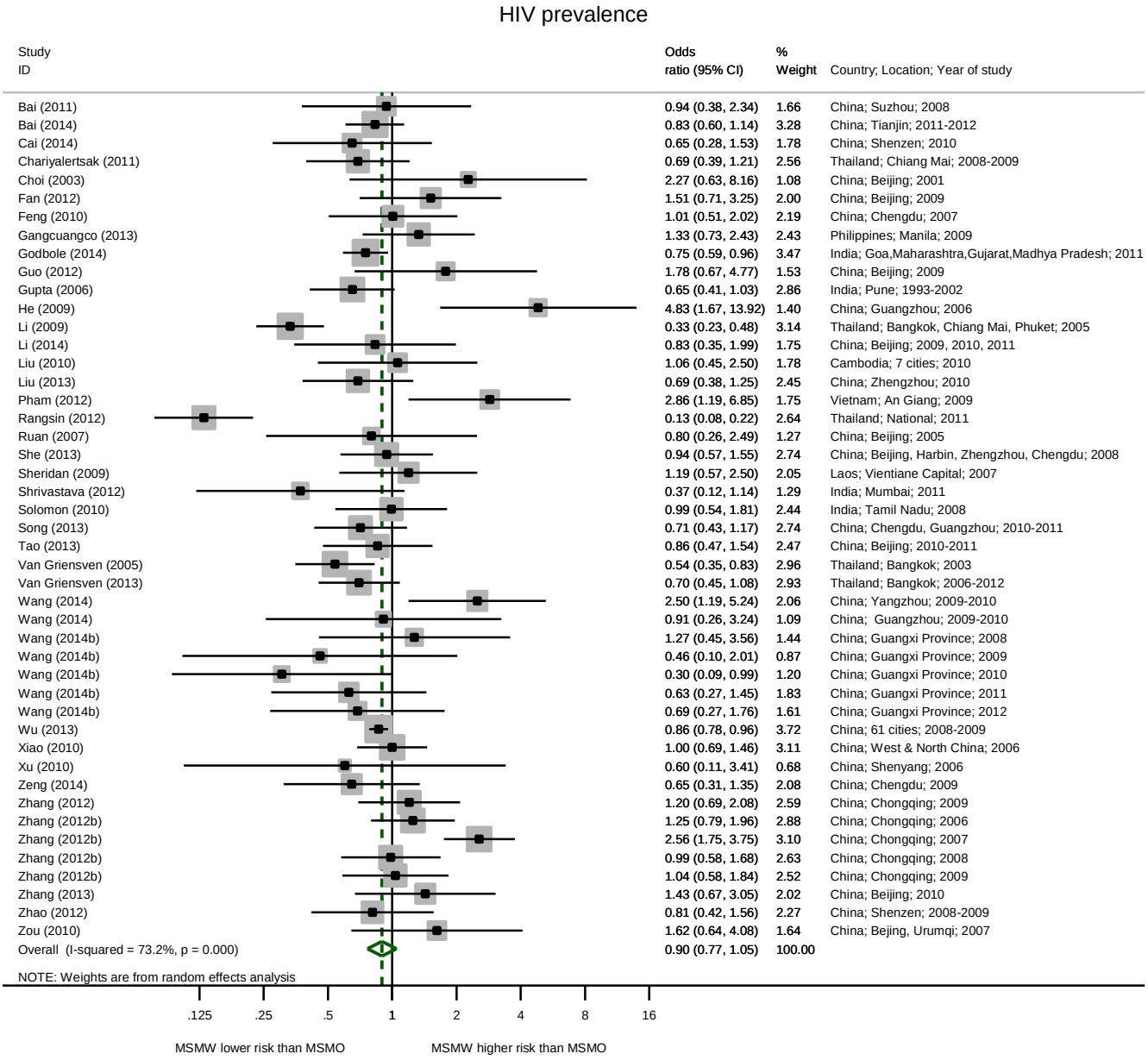
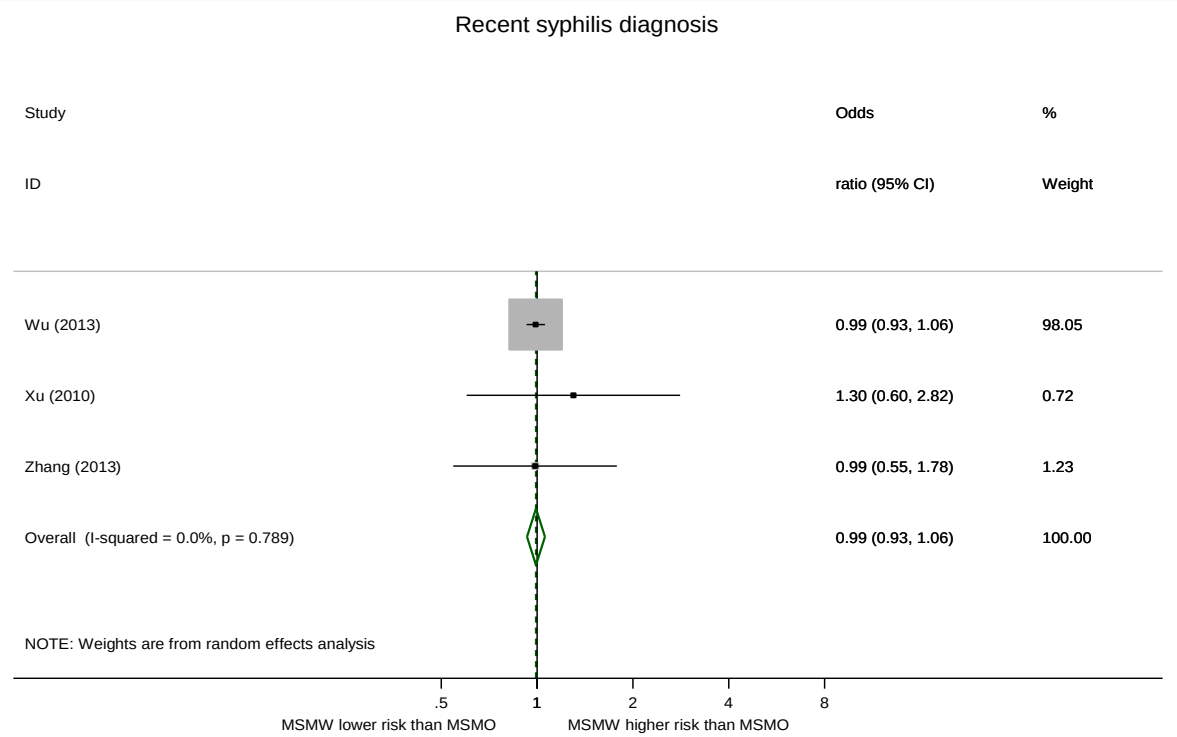


Figure 9 Forest plot for recent syphilis diagnosis MSMW compared to MSMO

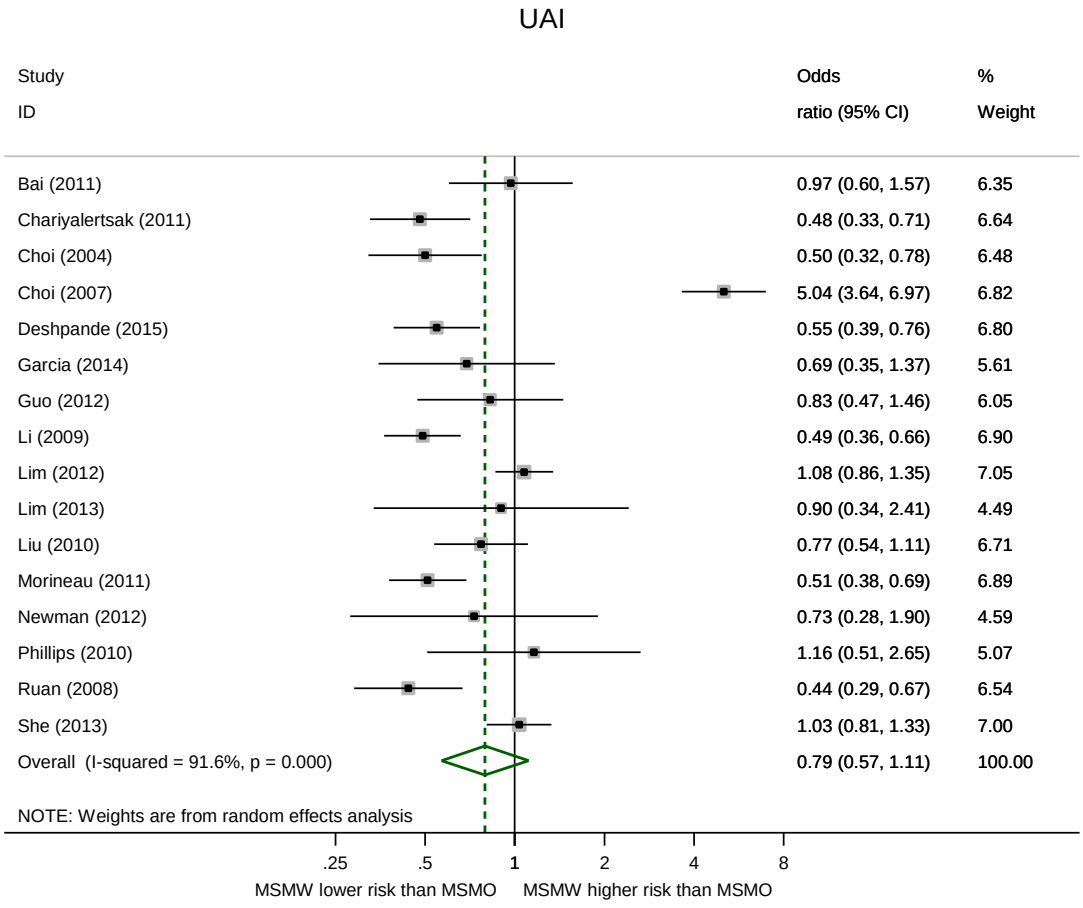


2.4.4 Unprotected sex

Sixteen studies with 22,257 MSM participants (median 516.5) reported on unprotected sex. Of these, 11 reported on any UAI, three distinguished UAI by partner type (regular, casual, sold sex, bought sex), and two distinguished between unprotected insertive and receptive anal intercourse (Table 7). For meta-analysis, these were all combined into a measure of UAI. The recall period for UAI varied: past six months (n=8), past 12 months (n=2), past three months (n=2), past month (n=2), last four sexual encounters (n=1), and last sex (n=1). UAI ranged from 20% to 82% among MSMW and 30% to 84% among MSMO. Six studies found significantly lower reported rates of UAI among MSMW compared to MSMO, one study found significantly higher reported rates of UAI among MSMW compared to MSMO, and nine studies found no significant difference in reported rates of UAI between MSMW and MSMO.

The pooled result showed no significant difference in reporting of UAI between MSMW and MSMO (OR 0.80; 95%CI 0.57–1.14; $p = 0.18$) (Figure 10). High heterogeneity was detected (I^2=91.6%, heterogeneity χ^2 $p < 0.01$). One outlier demonstrated substantially higher odds of reporting UAI among MSMW compared to MSMO (OR 5.04) [290]. Removing this outlier produced a more confident effect size (OR 0.69; 95%CI 0.56–0.84; $p < 0.01$) but did not meaningfully reduce the heterogeneity (I^2=72.1%, heterogeneity χ^2 $p < 0.01$). Sub-group analyses were all affected by this single outlier (Table 8). Excluding the two studies basing UAI on last sex or last four sexual encounters did not change the effect size (OR 0.79; 95%CI 0.54–1.16; $p = 0.237$) or heterogeneity (I^2=92.7%; heterogeneity χ^2 $p < 0.01$). Based on the funnel plot, there was no evidence of publication bias (Supplementary Figure 2).

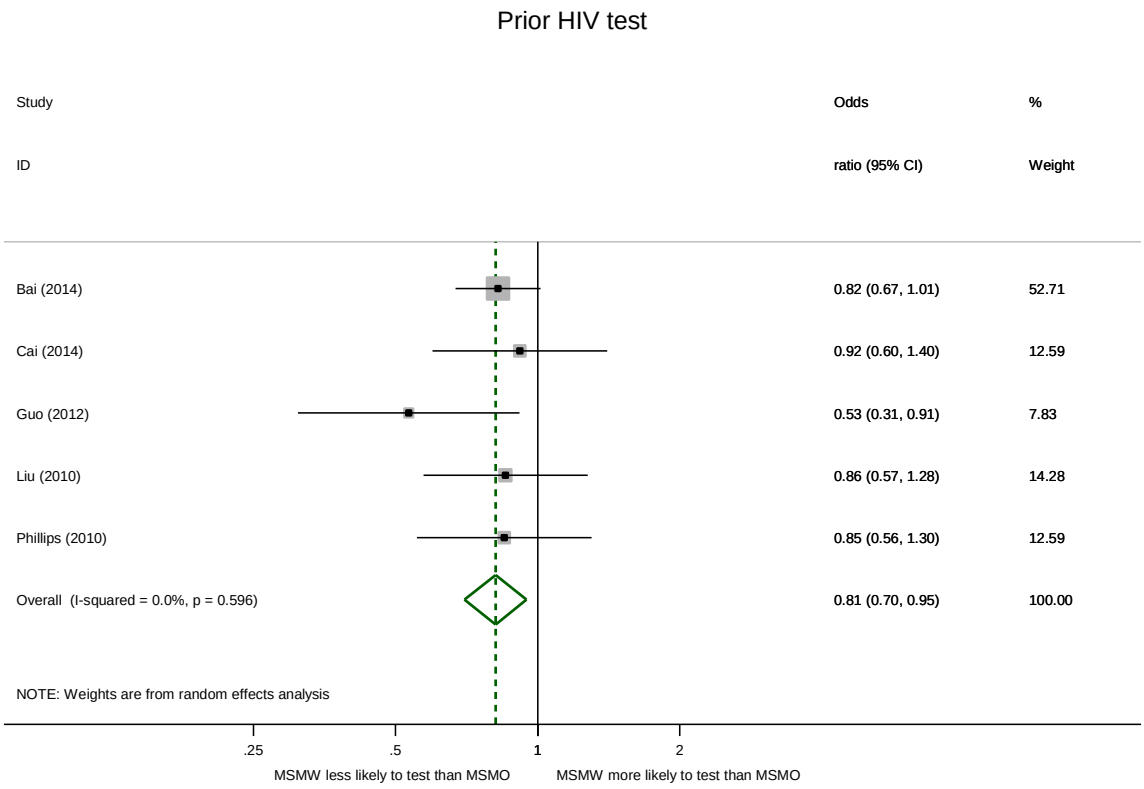
Figure 10 Forest plot for UAI in MSMW compared to MSMO



2.4.5 HIV testing history

Five studies with 3981 MSM participants (median 649) reported HIV testing history. Of these, three studies from China and one from India reported lifetime HIV testing and one study from Cambodia reported on past year HIV testing. Overall, prevalence of prior HIV testing ranged from 40–74% among MSMW and 40–77% among MSMO (Table 7). The pooled results showed that MSMW were less likely to report a prior HIV test than MSMO (OR 0.82; 95%CI 0.70–0.95; p = 0.01) (Figure 11), and heterogeneity was not detected (I^2 0%, heterogeneity χ^2 p = 0.60). There were too few studies to assess publication bias.

Figure 11 Forest plot for prior HIV test in MSMW compared to MSMO



2.5 Discussion

To our knowledge, this study is the first meta-analysis looking at comparative HIV and sexual risk among bisexual men across Asia. Studies did not regularly differentiate between subgroups of MSM, and over 100 studies were excluded from review on the basis of not providing disaggregated data on MSMW and MSMO. Based on a systematic review and meta-analysis of studies that did disaggregate data, a substantial proportion of MSM in Asia are bisexual and demonstrate similar prevalence of HIV and sexual risk practices as MSMO, but MSMW are less likely than MSMO to access HIV testing. The results of this meta-analysis recommend the routine disaggregation of basic HIV, sexual risk and health seeking data by MSMW and MSMO status.

Bisexual behaviour was common among MSM in Asia, and nearly one third of MSM in study samples reported sex with women. Across Asia there remains considerable diversity in the expression, visibility and acceptance of sexual minorities which may influence bisexual behaviour. For example, homosexual acts are illegal in 11 countries in the Asia region [74] and the availability of well-established gay-culture and designated nightlife varies. These differences notwithstanding, studies in Asia commonly describe that beyond sexual attraction and identity, some men are behaviourally bisexual due to stigmatisation of homosexuality and social norms and expectations to marry and have children [10, 42, 123, 124, 291]. Other men identify as heterosexual and are primarily attracted to women but have situational sex with men due to circumstances, opportunity, financial gain or

experimentation [42, 291, 292]. The emphasis on gender expression and sexual roles is also common to many Asian societies and may influence how men with bisexual behaviour identify their sexuality and risk [42].

Our results suggest that HIV and syphilis prevalence are comparable between MSMW and MSMO in Asia. Results may differ by region, with studies from South-East and South Asia demonstrating significantly lower HIV prevalence among MSMW compared with MSMO, while prevalence remained comparable between subgroups in Eastern Asia (China). MSMW were less likely to report UAI than MSMO, which might explain the lower HIV prevalence observed in some settings. Other studies have shown that MSMW are less likely to engage in receptive anal sex than MSMO [47, 55, 293], which given the differential risk in HIV transmission [194], may also reduce their HIV risk. Studies based on consecutive sampling demonstrated a greater discrepancy between HIV prevalence in MSMW and MSMO [294-298]. These studies also had a high prevalence of bisexual behaviour and may have sampled men who are predominantly heterosexual-identifying and have occasional and situational sex with men, including non-penetrative sex. Comparatively, studies recruiting men through MSM venues and peer networks may sample more self-disclosing and homosexually-active MSMW, thus narrowing the difference between MSMW and MSMO.

In this review, MSMW were less likely than MSMO to report a prior HIV test, consistent with other findings suggesting that MSMW are not adequately reached by HIV initiatives targeting MSM and are more likely to have late presentation for HIV diagnosis [82, 83, 299, 300]. In recent years regular and frequent HIV testing has become a cornerstone of HIV prevention and control [5] and is crucial to achieving current UNAIDS HIV prevention targets [24]. Our results suggest that in settings across Asia, many MSM are not testing at all, let alone frequently testing. Testing rates varied from 40% to 77%, but other studies in Asia not reporting disaggregated data have reported even lower testing rates among MSM [48, 66, 301]. Stigma, structural barriers, education, low risk perception, poor knowledge of available services, and non-disclosure to health professionals may impair access to HIV testing and counselling [72, 73, 302, 303].

Prevalence of HIV in sampled studies was often high and indicative of concentrated epidemics among MSM in Asia. Based on our results, this was true for both MSMW and MSMO. In view of low testing rates among MSMW, positive diagnoses may represent a significant period of undiagnosed and untreated infection, thus increasing transmissibility [304-306]. Although we only looked at condom use during anal sex with male partners, a range of studies in Asia have reported low levels of condom use with female partners among MSMW [51, 55, 122, 307-309]. Further, MSMW commonly do not disclose their behaviour to their contacts or female sex partners [47, 124, 310, 311]. Collectively, these results suggest a high risk of HIV and STI transmission from MSMW to their sexual partners, including women. However, the extent to which bisexuality contributes to epidemiological bridging at a population level has been questioned, and results are inconclusive [122, 269-273, 312, 313]. It is suggested that there is an increasing number of women becoming HIV infected in Asia who are infected through their partners and husbands [16], but showing epidemiological bridging empirically is problematic because low disclosure rates make it difficult to ascertain bisexual exposure in surveillance data or to recruit a cohort of bisexual men and their female partners [270]. Further

studies utilising phylogenetic analysis are needed to conclusively assess bridging between MSM and the general population [271]. Viral sequencing and linkage can help establish connectivity of HIV transmission between individuals and networks; for example, a study in Pakistan demonstrated HIV transmission links from people who inject drugs to the female partners of MSM via MSM-who inject drugs and bisexual MSM [271]. Population patterns of viral subtypes can also provide ecological evidence of mixing between transmission groups, given that subtypes of HIV virus have typically been associated with different populations, transmission risks, and geographical areas [314-316].

A systematic review based in China found that that the odds of HIV positivity were significantly greater in MSMW compared to MSMO (OR 1.3; 95%CI 1.04–1.62) [317]. Even when limiting our meta-analysis to studies in China, we found HIV positivity was proportionate in MSMW and MSMO. The prior review included Chinese-language articles and considered studies that stratified HIV positivity by marriage status of MSM rather than just behaviour, and these differences may explain the discrepancy in findings. Irrespective of these differences, both the China review and current meta-analysis suggest that HIV prevalence is more similar between MSMW and MSMO in Asia than in the US, where MSMW had significantly lower odds of testing HIV positive compared to MSMO [276]. The difference in findings between regions may be influenced by the sociocultural context in which bisexual behaviour frequently occurs in Asia, differences in access to HIV prevention services, or varying risk behaviours.

Studies included in the review were diverse in terms of sampling method, recruitment settings and definitions of MSM and bisexual recall. This resulted in high heterogeneity throughout analyses. Both empirical and real-world diversity in studies may limit reliability and comparisons. As we have noted earlier, there are local variations in the cultural meaning of bisexuality as well as socio-political acceptance, risk environments, sexual practices, identity, structural barriers and access to health systems which suggest caution when generalising findings across Asia. Because the diversity spanned so many study characteristics, no single subgroup analysis was able to control for the heterogeneity. There may also have been other sources of heterogeneity that we could not account for, such as number and frequency of anal sex partners.

There are a number of additional limitations to this meta-analysis. While no publication bias was evident, restricting eligibility to English-language publications will have excluded relevant articles, and there were many countries in Asia for which no eligible publications were identified. Further data is needed to explore sub-regional differences in risk. While a strategy for including unpublished literature was outlined, we may not have comprehensively identified all relevant grey literature. Most conference abstracts and reports did not differentiate between MSMW and MSMO, and abstract authors were unable to provide additional data. Because HIV testing was not a primary outcome in this review, we may have excluded publications only reporting on testing history but not HIV, STIs or UAI. Most studies could not differentiate between lifetime and recent syphilis, as per our definition, and disaggregated data on chlamydia and gonorrhoea prevalence were not available. This diminished our ability to confidently report on differences in STI prevalence. Further, all studies reporting on syphilis infection are based in China, and the meta-analysis is heavily weighted towards a single study with a sample size of nearly 50,000 MSM. Some studies defined MSM and sex with women based on different recall periods which may mean we have misclassified MSMW and MSMO. Finally, we were

unable to assess the importance of cultural definitions and self-identity of sexuality in this analysis, and we assessed bisexuality solely as a measure of behaviour. While behaviour is most directly associated with sexual risk, self-identity may influence sexual practices and access to services and information, and may therefore be an important determinant of risk in this population [42, 47, 51, 318, 319].

In conclusion, our findings suggest that in Asia MSMW have similar HIV and sexual risk to MSMO, yet they are considerably less likely to access HIV testing. This establishes MSMW as an important subgroup of men who have sex with men in Asia and emphasises the need to better engage MSMW in HIV prevention and sexual health services. Increasing collection and reporting of disaggregated data will help to inform tailored interventions to better meet the specific health and social needs of MSMW, including condom use with female partners.

2.6 Acknowledgements

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Table 7 Characteristics of studies describing HIV, STIs, UAI and HIV testing history among MSMW and MSMO in Asia

Study characteristics[a]																HIV positive (%)[e]		STI infection (%)[f]		UAI (%)[e,g]			Prior test for HIV (%)	
Study	**Country**	**Location**	**DC period**	**Study type**	**Sampling method**	**Setting**	**Survey method**	**Target population**	**Defn of male-male sex**	**Total sample size**	**Total MSM**	**MSMW *n* (%)**	**Bisexual recall period[d]**	**Gen HIV prev**	**Quality**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**Define**	**MSMW**	**MSMO**
Bai (2011) **[320]**	China	Suzhou, Jiangsu Province	2008	CS	I, SB	internet, peer groups	IA	MSM	AO	280	280	130 (49)	6m	VL	Low	6.9	7.3	-	-	60.0	59.3	any UAI, P6M	-	-
Bai (2014) **[321]**	China	Tianjin	2011-2012	CS	CV, SB	bathhouse	IA	MSM	AO	1642	1642	555 (34)	-	VL	High	11.4	12.9	-	-	-	-	-	39.5[h]	44.2[h]
Cai (2014) **[293]**	China	Shenzen	2010	CS	RDS	peer groups	SA	MSM	AO	649	649	107 (17)	6m	VL	High	5.9	8.8	-	-	-	-	-	38.3[h]	40.4[h]
Chariyalertsak (2011) **[294]**[i]	Thailand	Chiang Mai	2008-2009	CS	C	clinic	NS	MSM	NS	551	551[c]	185 (34)	-	M	High	10.3	14.2			49.4	66.9	any UAI, P6M		
Choi (2003, 2004) **[301, 322]**	China	Beijing	2001	CS	CV	MSM venues	IA	MSM	NS	482	482	308 (64)	lifetime	VL	High	3.9	1.8	-	-	-	-	UIAI & URAI (effect size only), P6M	-	-
Choi (2007) **[290]**	China	Shanghai	2004-2005	CS	SB	initial seeds recruited through MSM venues, peer groups	IA	MSM	NS	477	477	100 (21)	6m	VL	Low	-	-	-	-	-	-	any UAI	-	-
Deshpande (2015) **[309]**	India	Mumbai	2009-2010	CS	TL	MSM venues	IA	MSM	AOM	689	689	254 (37)	1m	VL	High	-	-	-	-	38.0	52.7	any UAI, P1M	-	-
Fan (2012) **[323]**	China	Beijing	2009	CS	RDS	peer groups	IA	MSM	AOM	500	500	104 (26)	6m	VL	High	15.0 (5.0-28.9)	5.8 (3.1-9.1)	-	-	-	-	-	-	-
Feng (2010) **[49]**	China	Chengdu	2007	CS	SB	peer groups	IA	MSM	AO	513	513	136 (27)	6m	VL	High	8.8	8.8	-	-	-	-	-	-	-
Gangcuangco (2013) **[40]**	Philippines	Manila	2009	CS	CV	MSM venues	IA	MSM	AO	406	406	186 (46)	lifetime	VL	Low	13.4	10.5	-	-	-	-	-	-	-
Garcia (2014) **[307]**	Vietnam		2011	CS	CV	internet	SA	MSM	AOM	2077	2077[c]	184 (11)	6m	VL	High	-	-	-	-	-	-	any UAI, P6M	-	-

Study characteristics[a]																HIV positive (%)[e]		STI infection (%)[f]		UAI (%)[e,g]			Prior test for HIV (%)	
Study	**Country**	**Location**	**DC period**	**Study type**	**Sampling method**	**Setting**	**Survey method**	**Target population**	**Defn of male-male sex**	**Total sample size**	**Total MSM**	**MSMW *n* (%)**	**Bisexual recall period[d]**	**Gen HIV prev**	**Quality**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**Define**	**MSMW**	**MSMO**
Godbole (2014) **[295]**	India	Goa,Maharashtra,Gujarat,Madhya Pradesh	2011	CS	R,C	CBO	IA	MSM	AO	4682	4682	2060 (44)	6m	VL	High	5.3	7.0	-	-	-	-	-	-	-
Guo (2012) **[83]**	China	Beijing	2009	CS	CV	internet, MSM venues, peer groups,	SA	YMSM migrant	NS	307	307	83 (27)	6m	VL	High	8.4	4.9	-	-	27.2	30.2	any UAI, last 4 encounters	62.7[h]	75.9[h]
Gupta (2006) **[296]**	India	Pune	1993-2002	CS	C	clinic	IA	Clinic attendees (gen)	NS	10785	708	583 (82)	lifetime	VL	Low	17.7	24.8	-	-	-	-	-	-	-
He (2009) **[58]**	China	Guangzhou	2006	CS	RDS	peer groups	IA	MSM	AO	423	423	100 (19)	6m	VL	High	4.2 (0-12.2)	0.9 (0.2-1.6)	-	-	-	-	-	-	-
Li (2009) **[55]**	Thailand	Bangkok, Chiang Mai, Phuket	2005	CS	TL	MSM venues	SA	MSM	AO	1575	1575	450 (29)	3m	M	High	8.2	21.2	-	-	22.4	37.1	any UAI, P3M	-	-
Li (2014) **[324]**	China	Beijing	2009, 2010, 2011	CS	RDS	peer groups	SA	MSM	AOM	1312	1312	199 (15)	6m	VL	High	3.1	3.7	-	-	-	-	-	-	-
Lim (2012) **[325]**	ASIA	Various	2010	CS	CV	internet	SA	MSM	NS	10413	10413[c]	729 (7)	6m	VL	Low	-	-	-	-	49.2	47.4	URAI, P6M	-	-
Lim (2013) **[326]**	Malaysia	Penang	2010	CS	CV	MSM venues, internet, peer groups	SA	MSM	NS	284	284	69 (24)	12m	VL	Low	-	-	-	-	81.8 (reg), 71.2 (cas)	84.1 (reg), 73.8 (cas)	UAI by partner type, P12M	-	-
Liu (2010) **[327]**	Cambodia	Phnom Penh, Banteay Meanchey, Battambang, Kandal, Siem Reap, Kampong Cham, Sihanoukville	2010	CS	CV	MSM venues, peer groups, CBO	SA	Males	NS	3007	1026[c]	592 (58)	12m	L	Low	2.2	2.1	-	-	50.5 (sell), 50.0 (buy)	57 (sell), 55,3 (buy)	UAI by partner type, last sex	73.9[i]	76.8[i]

Study characteristics[a]																HIV positive (%)[e]		STI infection (%)[f]		UAI (%)[e,g]			Prior test for HIV (%)	
Study	**Country**	**Location**	**DC period**	**Study type**	**Sampling method**	**Setting**	**Survey method**	**Target population**	**Defn of male-male sex**	**Total sample size**	**Total MSM**	**MSMW *n* (%)**	**Bisexual recall period[d]**	**Gen HIV prev**	**Quality**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**Define**	**MSMW**	**MSMO**
Liu (2013) **[328]**	China	Zhengzhou, Henan Province	2010	CS	CV	internet	SA	MSM	NS	388	388	191 (49)	6m	VL	High	11	15.2	-	-	-	-	-	-	-
Morineau (2011) **[51]**	Indonesia	Bandung, Jakarta, Malang, Medan , Semarang, Surabaya	2007	CS	TL, RDS	peer groups, MSM venues	IA	MSM	NS	1450	1450	348 (24)	1m	L	High	-	-	-	-	-	-	any UAI, P1M	-	-
Newman (2012) **[50]**	Thailand	Bangkok, Chiang Mai		CS	CV	MSM venues[b]	IA	MSM	NS	168	168[c]	61 (36)	3m	VL	Low	-	-	-	-	-	-	any UAI, P3M	-	-
Pham (2012) **[41]**	Vietnam	An Giang	2009	CS	CV	MSM venues	IA	MSM	AO	381	381[c]	163 (43)	lifetime	VL	Low	9.8	3.7	-	-	-	-	-	-	-
Phillips (2010)[j] **[47]**	India	Bangalore	2006	CS	TL	MSM venues	IA	MSM	NS	357	357[c]	146 (41)	12m	VL	High	-	-	-	-	20.0 (reg), 47.3 (cas), 44.4 (sell), 37.2 (buy)	37.5 (reg), 43.6 (cas), 30.5 (sell), 25.0 (buy)	UAI by partner type, P12M	-	-
Rangsin (2012) **[297]**	Thailand		2011	CS	C	Military	SA	Males	NS	35595	2269	1930 (85)	-	M	Low	1.3	9.4	-	-	-	-	-	-	-
Ruan (2007) **[53]**	China	Beijing	2005	CS	CV	internet, peer groups, MSM venues	IA	MSM	NS	526	526	152 (29)	lifetime	VL	Low	2.6	3.5	-	-	-	-	-	-	-
Ruan (2008) **[66]**	China	Jinan	2007	CS	RDS	peer groups	IA	MSM	NS	428	428	140 (33)	6m	VL	High	-	-	-	-	59.3 (38.9-57.4)	62.9 (62.7-75.2)	any UAI, P6M	-	-
She (2013) **[329]**	China	Beijing, Harbin, Zhengzhou and Chengdu	2008	CS	SB	peer groups	IA	MSM	A	1693	1693	303 (18)	6m	VL	High	6.6	7	-	-	54.8	54.0	any UAI, P6M	-	-
Sheridan	Laos	Vientiane	2007	CS	CV	MSM	SA	MSM	AO	540	540[c]	213 (39)	3m	VL	High	6.1	5.2	-	-	-	-	-	-	-

Study characteristics[a]																HIV positive (%)[e]		STI infection (%)[f]		UAI (%)[e,g]			Prior test for HIV (%)	
Study	**Country**	**Location**	**DC period**	**Study type**	**Sampling method**	**Setting**	**Survey method**	**Target population**	**Defn of male-male sex**	**Total sample size**	**Total MSM**	**MSMW *n* (%)**	**Bisexual recall period[d]**	**Gen HIV prev**	**Quality**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**Define**	**MSMW**	**MSMO**
(2009) **[48]**		Capital				venues																		
Shrivastava (2012) **[298]**	India	Mumbai	2011	CS	C	clinic	IA	Clinic attendees (gen)	NS	188	84[c]	48 (57)	-	VL	Low	12.5	27.8	-	-	-	-	-	-	-
Solomon (2010) **[124]**	India	Tamil Nadu	2008	CS	CV	peer groups	IA	MSM	AO	721	721	314 (44)	12m	VL	High	-[k]	-[k]	-	-	-	-	-	-	-
Song (2013) **[330]**	China	Chengdu, Guangzhou	2010-2011	CS	SB	peer groups	IA	MSMW	A	600	600	516 (86)	12m	VL	Low	25.2	32.1	-	-	-	-	-	-	-
Tao (2013) **[331]**	China	Beijing	2010-2011	CS	CV	clinic, MSM venues, internet, peer groups,	IA	MSM	A	1141	1141	520 (46)	lifetime	VL	Low	4.9	5.7	-	-	-	-	-	-	-
van Griensven (2005) **[68]**	Thailand	Bangkok	2003	CS	TL	MSM venues	IA	MSM	AO	1121	1121	249 (22)	6m	M	High	11.2	19.0	-	-	-	-	-	-	-
van Griensven (2013) **[27]**	Thailand	Bangkok	2006-2012	CH (baseline)	CV	clinic, MSM venues, peer groups, internet	SA	MSM	A	1744	1744	159 (9)	4m	M	High	16.4	21.8	-	-	-	-	-	-	-
Wang (2014) **[332]**	China	Yangzhou	2009-2010	CH (baseline)	SB	MSM venues, peer groups,	SA	MSM	AOM	317	317	188 (59)	6m	VL	High	19.1	7.8	-	-	-	-	-	-	-
Wang (2014) **[332]**	China	Guangzhou	2009-2010	CH (baseline)	SB	MSM venues, peer groups,	SA	MSM	AOM	305	305	52 (17)	6m	VL	High	5.8	6.3	-	-	-	-	-	-	-
Wang (2014b) **[333]**	China	Nanning, Liuzhou, Guilin, Beihai (Guangxi Province)	2008	CS	CV	CBO, internet, peer groups	IA	MSM	NS	1146	1146	250 (22)	6m	VL	Low	1.9	3	-	-	-	-	-	-	-

Study characteristics[a]																HIV positive (%)[e]		STI infection (%)[f]		UAI (%)[e,g]			Prior test for HIV (%)	
Study	Country	Location	DC period	Study type	Sampling method	Setting	Survey method	Target population	Defn of male-male sex	Total sample size	Total MSM	MSMW *n* (%)	Bisexual recall period[d]	Gen HIV prev	Quality	MSMW	MSMO	MSMW	MSMO	MSMW	MSMO	Define	MSMW	MSMO
Wang (2014b) **[333]**	China	Nanning, Liuzhou, Guilin, Beihai (Guangxi Province)	2009	CS	CV	community orgs/NGOs; internet; peer groups	IA	MSM	NS	1351	1351	302 (22)	6m	VL	Low	2	1.6	-	-	-	-	-	-	-
Wang (2014b) **[333]**	China	Nanning, Liuzhou, Guilin, and Beihai (Guangxi Province)	2010	CS	CV	CBO, internet, peer groups	IA	MSM	NS	1257	1257	263 (21)	6m	VL	Low	2.7	3.8	-	-	-	-	-	-	-
Wang (2014b) **[333]**	China	Nanning, Liuzhou, Guilin, Beihai (Guangxi Province)	2011	CS	CV	CBO, internet, peer groups	IA	MSM	NS	1314	1314	372 (28)	6m	VL	Low	1.1	3.7	-	-	-	-	-	-	-
Wang (2014b) **[333]**	China	Nanning, Liuzhou, Guilin, Beihai (Guangxi Province)	2012	CS	CV	CBO, internet, peer groups	IA	MSM	NS	1301	1301	190 (15)	6m	VL	Low	0.7	1.4	-	-	-	-	-	-	-
Wu (2013) **[334]**	China	61 cities	2008-2009	CS	SB	peer groups	IA	MSM	NS	47231	47231	11100 (24)	6m	VL	High	4.4	5.3 (5.1–5.6)	11.7	11.8	-	-	-	-	-
Xiao (2010) **[335]**	China	20 cities in Western and Northern China	2006	CS	CV	MSM venues, peer groups, internet	IA	MSM	AO	4983	4983	1298 (26)	6m	VL	High	2.9	2.9	-	-	-	-	-	-	-
Xu (2010) **[336]**	China	Shenyang	2006	CH (endline)	CV	CBO	IA	MSM	A	122	122	53 (43)	12m	VL	High	3.8	5.8	37.7	26.1					
Zeng (2014) **[337]**	China	Chengdu	2009	CS	SB	peer groups	IA	MSM	NS	570	570	94 (16)	6m	VL	Low	9.6	14.1	-	-	-	-	-	-	-
Zhang (2012) **[338]**	China	Chongqing,	2009	CS	RDS	peer groups	SA	MSM	AOM	503	503	113 (40)	lifetime	VL	High	14.6	9.5	-	-	-	-	-	-	-

Study characteristics[a]																HIV positive (%)[e]		STI infection (%)[f]		UAI (%)[e,g]			Prior test for HIV (%)	
Study	**Country**	**Location**	**DC period**	**Study type**	**Sampling method**	**Setting**	**Survey method**	**Target population**	**Defn of male-male sex**	**Total sample size**	**Total MSM**	**MSMW *n* (%)**	**Bisexual recall period[d]**	**Gen HIV prev**	**Quality**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**MSMW**	**MSMO**	**Define**	**MSMW**	**MSMO**
Zhang (2012b) **[339]**	China	Chongqing	2006	CS	SB	MSM venues, peer groups, internet	IA	MSM	AO	953	953	238 (25)	6m	VL	High	19.5 (11.2-27.9)	19 (15.6-22.4)	-	-	-	-	-	-	-
Zhang (2012b) **[339]**	China	Chongqing	2007	CS	SB	MSM venues, peer groups, internet	IA	MSM	AO	1015	1015	258 (25)	6m	VL	High	16.4 (9.6-23.1)	16.6 (13.7-19.5)	-	-	-	-	-	-	-
Zhang (2012b) **[339]**	China	Chongqing	2008	CS	SB	MSM venues, peer groups, internet	IA	MSM	AO	743	743	116 (16)	6m	VL	High	12.6 (8.4-16.8)	10.3 (8.1-12.6)	-	-	-	-	-	-	-
Zhang (2013) **[340]**	China	Beijing	2010	CS	SB	MSM venues, internet, peer groups,	IA	MSM	NS	302	302	117 (39)	lifetime	VL	High	21.7 (16.7-26.7)	9.8 (7.7-11.9)	-	-	-	-	-	-	-
Zhao (2012) **[341]**	China	Chongqing	2009	CS	SB	MSM venues, peer groups, internet	IA	MSM	AO	603	603	87 (14)	6m	VL	Low	12.0	8.7	18.8	19.0	-	-	-	-	-
Zhao (2012) **[341]**	China	Shenzen	2008-2009	CS	TL	MSM venues	SA	MSM	AO	801	801	200 (25)	6m	VL	High	6.0	7.3	-	-	-	-	-	-	-
Zou (2010) **[313]**	China	Bejing, Urumqi	2007	CS	CV	internet, peer groups	IA	MSM	AO	399	399	164 (41)	lifetime	VL	Low	6.2	3.9	-	-	-	-	-	-	-

[a] Explanation of study characteristics: DC period refers to data collection period. Study type refers to study design (CD=cross-sectional; CH=cohort). Sampling method refers to recruitment method (RDS=respondent driven sampling, SB=snowball, TL=time location, C=consecutive, I=internet-based, CV= convenience, R=simple random). Recruitment setting (MSM venues=bars, clubs, bathhouses; CBO=community-based organisation; clinic=STI or HIV voluntary counselling and testing clinic). Target population refers to target population of the whole study (MSM=men who have sex with men; MSMW=men who have sex with men and women; YMSM=young men who have sex with men; clinic attendees (gen)=general population attending STI/VCT clinic). Defn of male-to-male sex refers to definition used to define sex between men (A=anal sex; AO=anal or oral sex; AOM=anal, oral or manual sex; NS=not specified). Survey method refers to method of administering behavioural survey (SA=self-administered; IA=interviewer-administered; NS=not specified). Gen HIV prev (prevalence) refers to HIV prevalence in the general population (VL=very low, <0.5%; L=low, 0.5-1%; M =medium, 1.1-4.9%). Quality classified as higher (high; ≥6 out of 11) and lower (low; <6 out of 11). [b] Results stratified by recruitment venue: community-based organisation (CBO) and gay venues. Sample size of MSM recruited from CBOs did not fit inclusion criteria and was excluded; [c] Male-to-female transgender people counted as MSM; [d] bisexual recall period reported in months (m) or lifetime; [e] Range in brackets refers to population estimated prevalence range as reported by study; [f] STI infection defined as recent syphilis infection; [g] Condom use reported as any unprotected anal sex (any UAI), by partner type: regular (reg), casual (cas), when buying sex (buy), when selling sex (sell)), unprotected receptive anal intercourse (URAI), unprotected insertive anal intercourse (UIAI). Recall period for UAI based on last sex, last 4 encounters, past month (P1M), past 3 months (P3M), past 6 months (P6M), or past 12 months (P12M); [h] Ever had a prior HIV test; [i] Tested for HIV in the past year; [j] Supplementary data provided by author; [k] Only effect size given; Dash represents data not available.

Table 8 Effect size for HIV and UAI prevalence among MSMW compared to MSMO by study characteristics

	HIV						UAI					
Variable	**k**	**OR**	**(95% CI)**	***p*-value**	**Heterogeneity χ2 test**	**I²**	**k**	**OR**	**(95% CI)**	***p*-value**	**Heterogeneity χ2 test**	**I²**
Overall	46	0.90	(0.77, 1.07)	0.17	< 0.01	73.2	16	0.80	(0.57, 1.11)	0.18	< 0.01	91.6
Region												
South-East Asia	9	0.69	(0.41, 1.16)	0.16	< 0.01	87.8	7	0.56	(0.48, 0.66)	< 0.01	0.39	4.3
South Asia	4	0.74	(0.60, 0.90)	< 0.01	0.45	0.0	2	0.72	(0.35, 1.47)	0.37	0.10	63.5
Eastern Asia	33	1.03	(0.89, 1.20)	0.68	< 0.01	51.8	6	0.99	(0.47, 2.12)	0.99	< 0.01	95.7
Asia wide	0	-	-	-	-	-	1	1.08	(0.86, 1.35)	0.52	-	-
Data collection period												
Before 2006	5	0.59	(0.37, 0.93)	0.02	0.02	67.3	3	1.08	(0.22, 5.25)	0.93	< 0.01	98.4
2006 and later	41	0.94	(0.80, 1.11)	0.47	< 0.01	69.8	12	0.73	(0.58, 0.91)	0.01	< 0.01	72.5
Unknown	0	-	-	-	-	-	1	0.73	(0.54, 1.01)	0.52	-	-
Sample size												
<1000	28	1.06	(0.89, 1.26)	0.53	0.03	36.8	10	0.84	(0.46, 1.55)	0.58	< 0.01	93.8
>=1000	18	0.71	(0.55, 0.92)	0.01	< 0.01	85.2	6	0.74	(0.54, 1.01)	0.05	< 0.01	83.5
Sampling method												
Consecutive	5	0.45	(0.24, 0.87)	0.02	< 0.01	88.8	1	0.48	(0.33, 0.71)	< 0.01		
RDS	5	1.30	(0.75, 2.25)	0.36	0.05	58.3	1	0.44	(0.29, 0.67)	< 0.01		
Other convenience	36	0.95	(0.81, 1.11)	0.53	< 0.01	64.8	14	0.86	(0.60, 1.25)	0.43	< 0.01	91.8
Recruitment setting												
Multiple	20	1.08	(0.86, 1.36)	0.50	< 0.01	52.6	5	0.72	(0.55, 0.95)	0.02	0.14	42.1
MSM venues	8	0.92	(0.58, 1.45)	0.71	< 0.01	81.7	5	0.54	(0.45, 0.66)	< 0.01	0.38	5.3
Peer groups	11	0.95	(0.78, 1.17)	0.63	0.12	35.4	3	1.32	(0.37, 4.80)	0.67	< 0.01	97.9
STI/VCT clinic	3	0.63	(0.45, 0.89)	0.01	0.62	0.0	1	0.48	(0.33, 0.71)	< 0.01		
Internet	1	0.69	(0.38, 1.25)	0.22	-	-	2	0.97	(0.68, 1.40)	0.88	0.23	32.0
Military	1	0.13	(0.08, 0.22)	< 0.01	-	-	0	-	-	-	-	-
Community organisation	2	0.75	(0.59, 0.95)	0.02	0.80	0.0	0	-	-	-	-	-
General HIV prevalence												
Very low	40	1.01	(0.88, 1.16)	0.86	< 0.01	52.8	10	0.92	(0.59, 1.44)	0.73	< 0.01	92.5
Low	1	1.06	(0.45, 2.50)	< 0.01			2	0.62	(0.41, 0.93)	0.02	0.09	66.2
Medium	5	0.41	(0.24, 0.71)	0.89	<0.01	86.5	3	0.50	(0.40, 0.63)	< 0.01	0.72	0.0
Definition of male-to-male sex												
Anal	5	0.78	(0.61, 1.00)	0.05	0.89	0.0	1	1.03	(0.81, 1.33)	0.79	-	-
Anal or oral	19	1.04	(0.80, 1.35)	0.77	< 0.01	79.7	2	0.67	(0.34, 1.31)	0.24	0.02	82.3
Anal, oral or manual	5	1.36	(0.94, 1.95)	0.10	0.34	10.8	2	0.57	(0.42, 0.77)	< 0.01	0.55	0.0
Missing	17	0.69	(0.51, 0.95)	0.02	< 0.01	74.2	11	0.84	(0.51, 1.37)	0.48	< 0.01	93.5
Transgender included as MSM												
No	41	0.89	(0.75, 1.04)	0.15	< 0.01	74.5	10	0.80	(0.49, 1.33)	0.40	< 0.01	94.5
Yes	5	1.01	(0.56, 1.80)	0.98	0.03	61.6	6	0.78	(0.57, 1.08)	0.13	0.02	63.9
Bisexual recall period												
6 months or less	29	0.92	(0.77, 1.11)	0.38	< 0.01	71.4	12	0.81	(0.53, 1.22)	0.30	< 0.01	93.5
12 months	4	0.84	(0.60, 1.18)	0.32	0.77	0.0	3	0.83	(0.61, 1.14)	0.25	0.66	0.0
Lifetime	9	1.18	(0.86, 1.61)	0.30	0.10	40.6	0	-	-	-	-	-
Unknown	4	0.42	(0.16, 1.06)	0.07	< 0.01	91.6	1	0.48	(0.33, 0.71)	< 0.01	-	-
Quality[a]												
Higher	17	1.00	(0.74, 1.35)	0.99	< 0.01	81.0	5	0.61	(0.43, 0.88)	0.01	< 0.01	81.6
Lower	29	0.84	(0.69, 1.01)	0.07	< 0.01	66.4	11	0.90	(0.56, 1.46)	0.68	< 0.01	92.6

[a] Quality classified as higher for studies scoring over 6/11 and lower for studies score 6 or less out of 11.

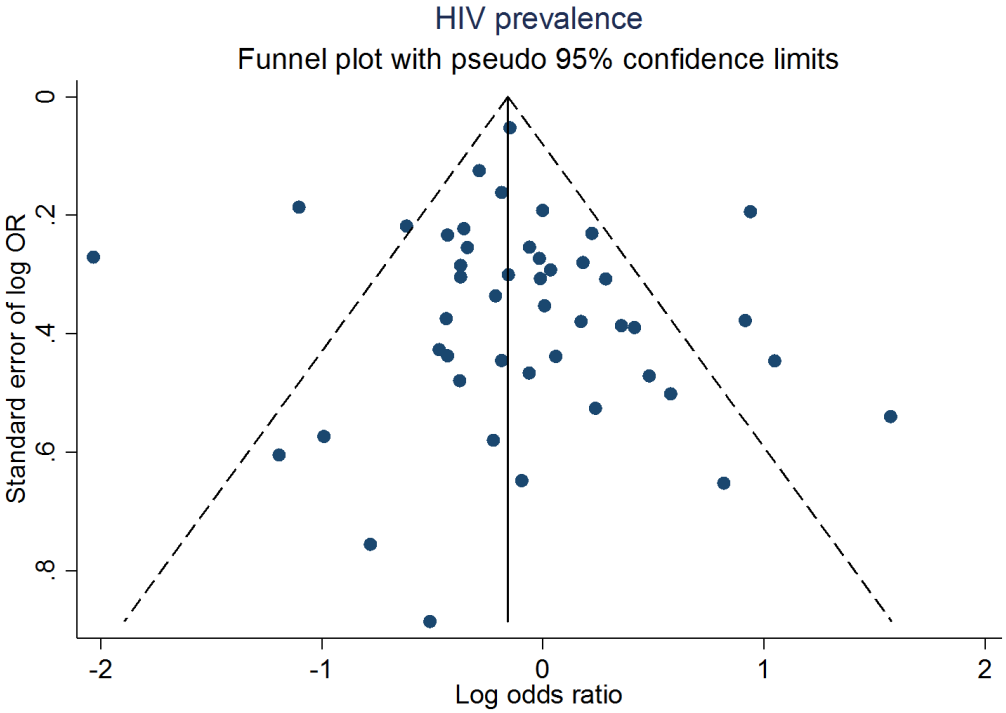
k, number of studies; OR, odds ratio; Dash represents results not applicable.

2.7 Supplementary information

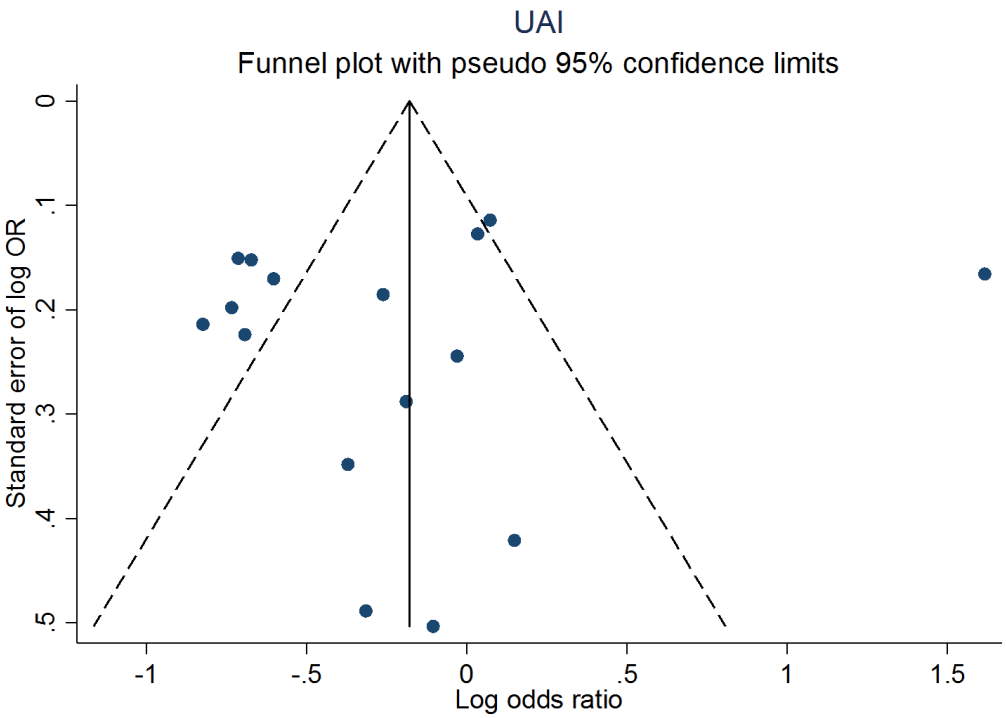
Supplementary Table 1 Ovid Medline search strategy

1. exp Bisexuality/
2. exp Homosexuality, Male/
3. bisexual*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
4. MSMW.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
5. MSM.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
6. men who have sex with men.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
7. gay men.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
8. non-heterosexual.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
9. homosexual*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
10. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9
11. exp HIV/ or exp HIV Infections/
12. exp Sexually Transmitted Diseases/
13. (chlamydia or gonorrhoea or gonorrhea or syphilis or HIV).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
14. Risk-Taking/
15. unsafe sex.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
16. exp Unsafe Sex/ or exp Sexual Behavior/
17. unprotected anal sex.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
18. unprotected anal intercourse.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
19. UAI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
20. condomless.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
21. HIV test*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
22. 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20
23. asia/ or exp asia, southeastern/ or asia, western/ or bangladesh/ or bhutan/ or exp india/ or nepal/ or pakistan/ or sri lanka/ or exp far east/ or afghanistan/ or iran/
24. (China or Thailand or Vietnam or Laos or Myanmar or Burma or Cambodia or Indonesia or India or Singapore or Taiwan or Malaysia or Bangladesh or Pakistan or Nepal or Sri Lanka or East Timor or Japan or Korea or Hong Kong or Mekong or Bhutan or Tibet or Mongolia or Philippines or Brunei or Maldives or Afghanistan or Iran).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
25. (Asia or Southeast* Asia or Mekong or South Asia).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
26. 23 or 24 or 25
27. 10 and 22 and 26
28. limit 27 to (english language and yr="2000 -Current")

Supplementary Figure 1 Funnel plot for studies reporting on HIV



Supplementary Figure 2 Funnel plot for studies reporting on UAI



Chapter Three

3 . Sexual identity and risk in bisexual men in Laos

MSM in Laos are disproportionately affected by HIV, with prevalence estimates as high as 5.6% compared to 0.2% in the general population. Previous studies in Laos have demonstrated that MSM are diverse in gender identity, sexual orientation, and sexual behaviour, and current initiatives may not be adequately reaching all men. In Chapter 2 a systematic review established that behaviourally bisexual men are an important subgroup of MSM.

This chapter is the first of three chapters based off a quantitative behavioural survey conducted in 2010 among behaviourally bisexual men and their sexual partners in Vientiane, Laos. The use of enhanced snowball sampling enabled greater access to men with identities incongruent with MSM behaviour and was used to map the sexual networks of behaviourally bisexual men. The total sample included 298 individuals of male, female and kathoey gender. Of these, 189 participants were male, of whom 88 could be classified as behaviourally bisexual men and are the focus of this analysis. Previous worked published from this study demonstrated that behaviourally bisexual men interlinked networks of heterosexual men and women, behaviourally homosexual men, and transgender people (Appendix A-5).

This work provides the first detailed examination of men with bisexual behaviour in Laos, and adds to a scarcity of research on bisexual men in South-East Asia. An improved understanding of identity and risk of behaviourally bisexual men has implications for tailoring and targeting health promotion and HIV prevention services to this population in Laos.

This chapter represents the following published paper:

> Bowring AL, van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Phimphachan C, et al. Identifying risk: a comparison of risk between heterosexual-identifying bisexual men and other bisexual men in Vientiane, Laos. *AIDS Educ Prev*. 2014; 26:109-21.

Declaration for Thesis Chapter Three

MONASH UNIVERSITY
Declaration by candidate

In the case of Chapter 3, the nature and extent of my contribution to the work was the following:

Nature of contribution	**Extent of contribution (%)**
Data analysis, results interpretation, manuscript preparation and review	65%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	**Nature of contribution**	**Extent of contribution (%)***
Caroline van Gemert	Study design, study coordination, manuscript review	10%
Kongchay Vongsaiya	Project coordination, study collection, manuscript review	N/A
Chad Hughes	Study design, manuscript review	N/A
Amphoy Sihavong	Local technical oversight, manuscript review	N/A
Chansy Phimphachanh	Local technical oversight, manuscript review	N/A
Niramonh Chanlivong	Study coordination, manuscript review	N/A
Mike Toole	Study design, manuscript review	N/A
Margaret Hellard	Study design, manuscript review	N/A

* For student co-authors only

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work.

Candidate's Signature [redacted] **Date** 11/9/2011

Main Supervisor's Signature [redacted] **Date** 11/9/2011

Identifying risk: a comparison of risk between heterosexual-identifying bisexual men and other bisexual men in Vientiane, Laos

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3.1 Abstract

Men who have sex with men are a priority population for HIV control in Laos, but encompass men diverse in sexual orientation, gender identification and behaviour. Behaviourally bisexual men and their sexual partners were recruited in Vientiane, Laos using modified snowball sampling (2010). *Heterosexual-identifying bisexual men* identified as exclusively/predominantly heterosexual and *other bisexual men* identified as bisexual or predominantly/exclusively homosexual. Sixty (68%) heterosexual-identifying and 38 (32%) other bisexual men were recruited; median number of sex partners in the past year was eight and seven, respectively. Consistent condom use was low with regular (7%) and casual (35%) partners and did not differ by identity. More heterosexual-identifying (53%) than other bisexual (29%) men reported weekly alcohol consumption. Twelve (20%) heterosexual-identifying and 15 (54%) other bisexual men correctly answered all HIV-knowledge questions. High-risk behaviours for STI and HIV transmission were common. Targeted HIV prevention initiatives are needed, particularly to reach heterosexual-identifying bisexual men.

3.2 Introduction

Men who have sex with men in Lao People's Democratic Republic (herein referred to as Laos) encompass numerous subgroups, incorporating individuals with diverse sexual identities, gender roles and sexual practices [156]. Bisexual behaviour among men is common; in a study of young men, 8% of men reported sex with at least one man and one women in the past 6 months [175], and in a study of men who have sex with men, 39% also reported sex with a woman in the previous three months [48]. These studies noted that it is common for men with male partners to identify as straight or heterosexual [48, 175].

Whilst the prevalence of HIV in Laos is relatively low (0.2%) in the general population [342], HIV prevalence among men who have sex with men is considerably higher. It was estimated to be 5.6% among men who have sex with men in Vientiane, the capital of Laos, in 2007 [48], and there is concern that the prevalence will continue to increase. The Asian Epidemic Model projected that male-to-male sex will account for an increasing proportion of new HIV infections in the Asian region – up to fifty per cent by 2020 [15].

Current HIV prevention efforts in Laos targeting men who have sex with men are primarily aimed at other male-to-female transgender women (commonly known as '*kathoey teng ying*' or '*kathoey phom yao*' in Laos and herein referred to as 'kathoey') or their sexual partners, but are unlikely to adequately engage men who have sex with men but who do not identify as homosexual, bisexual or kathoey or their equivalents [3, 4, 10, 136, 343, 344]. An improved understanding of the interplay between self-identity, behaviour and sexual networking among men who have sex with both men and women, will assist public health practitioners in providing tailored sexual health promotion and HIV prevention services for these men and their partners. We describe demographic and sexual behaviour characteristics among a population of male participants who report bisexual behaviour and compare men according to sexual identity in order to assess whether difference in risk levels can be explained by sexual identity.

3.3 Methods

3.3.1 Study design

A retrospective cross-sectional behavioural survey was conducted with people linked via sexual contact in Vientiane, the capital of the Laos, between June and October 2010.

3.3.2 Recruitment and study population

Recruitment methods have been described previously [343]. Briefly, behaviourally bisexual men and their sexual networks were recruited in Vientiane via enhanced snowball sampling. Recruitment begun with ten behaviourally bisexual men ('seeds'), who referred up to five of their recent sex partners, and who in turn nominated up to five of their own sex partners for two to three waves of recruitment. Participants were required to be aged 18 years and older and to have engaged in anal, vaginal or oral sex in the previous 12 months.

This analysis is limited to male participants who reported male and/or kathoey and female sex partners in their lifetime (behaviourally bisexual men). For the purpose of brevity, herein they will be referred to as bisexual men.

3.3.3 Data collection

Trained field researchers recruited participants and obtained informed consent. Participants self-completed a sexual behavioural questionnaire in Lao or English language using a hand-held computer programmed with Microsoft Visual Studio. Questionnaires took approximately 30 minutes to complete, and participants were reimbursed approximately $US2.50.

Information on demographic, sexual behaviour, alcohol and drug use, and HIV knowledge was collected, including lifetime and past year sexual contact with males, females and kathoey and sexual contact with regular, casual, paid, paying and foreign partners.

3.3.4 Measurement

Sexual identity was assessed using the Kinsey Scale, a 7-point scale of sexual orientation [87]. Behaviourally bisexual men were classified as *heterosexual-identifying bisexual* if they reported self-identifying as exclusively or predominantly heterosexual (Kinsey 0–2) and *other bisexual* if they reported self-identifying as bisexual, predominantly or exclusively homosexual (Kinsey 3–6).

Sex partner refers to an anal or vaginal sex partner (excluding oral sex partners) from the previous 12 months. *Number of sex partners in previous 12 months* (total and stratified by partner gender) was derived from the sum of regular, casual, paying, paid and foreign sex partners in previous 12 months. A *paying sex partner* is someone who gave money, gifts, or favours to the respondent in exchange for sex (i.e. respondent sold sex). A *paid sex partner* is someone to whom to respondent gave money, gifts, or favours in exchange for sex (i.e. respondent bought sex). Median numbers of sex partners were calculated only among men reporting at least one of the given partner gender or type. *Consistent condom use* (CCU) was defined as reporting always using a condom during anal and vaginal sex in the previous 12 months. Sex position was based on self-reported usual sex position with given partner gender and type (regular, casual, etc.), and grouped by partner gender. *Higher education* was defined as reporting education beyond upper secondary school.

Responses to eight HIV knowledge questions were recategorised as correct or incorrect (including "don't know"), and the percentage answering all questions correctly was calculated.

3.3.5 Analysis

Data were analysed using Stata (Version 11, Stata Corp., College Station, Texas, USA). Demographic characteristics and sexual behaviour were compared between heterosexual-identifying and other bisexual men using χ^2-test of proportions or Kruskal-Wallis equality-of-populations rank test. Associations between CCU and demographic characteristics, sexual identity, HIV knowledge and frequency of alcohol consumption among all bisexual men were explored using chi-square tests, with all analyses to significance level $p < 0.05$.

3.3.6 Ethics

Ethical approval was obtained from the Alfred Hospital Ethics Committee, the ethical review committees of the Australian National University and the University of Health Sciences (Laos), and the National Ethics Committee for Health Research of the Lao PDR.

3.4 Results

3.4.1 Classification of sexual behaviour

In total, 298 individuals were recruited and completed the behavioural survey. Of 189 men participating, 181 (96%) could be classified as behaviourally bisexual, homosexual or heterosexual based on lifetime sex partners. Of these men, 88 (49%) were classified as bisexual and are included in this analysis.

3.4.2 Sexual identity

Among men reporting bisexual behaviour during their lifetime, 16 (18%) identified as exclusively heterosexual, 34 (39%) identified as predominantly heterosexual but incidentally homosexual, 10 (11%) identified as predominantly heterosexual but more than incidentally homosexual, seven (8%) identified as equally heterosexual and homosexual, 11 (13%) identified as predominantly homosexual but more than incidentally heterosexual, six (4%) identified as predominantly homosexual but less than incidentally heterosexual, and four (5%) identified as exclusively homosexual. When grouped, 60 (68%) bisexual men were classified as heterosexual-identifying bisexual and 28 (32%) were classified as other bisexual men.

3.4.3 Demographics

The median age of heterosexual-identifying and other bisexual men was 22 and 23 years, respectively ($p = 0.14$) (Table 9). More heterosexual-identifying bisexual (70%) than other bisexual (46%) men were currently studying ($p = 0.03$) and less heterosexual-identifying bisexual (43%) than other bisexual (68%) men were currently employed ($p = 0.03$). The majority of heterosexual-identifying bisexual men were currently sharing a room or dormitory (55%) followed by living with parents (25%), while the majority of other bisexual men were living with parents (54%) or relatives (32%), following by sharing a room or dormitory (14%, $p < 0.01$). A higher proportion of other bisexual men (64%) than heterosexual-identifying bisexual men (35%) were originally from Vientiane ($p = 0.01$).

3.4.4 Sexual initiation

The median age of first anal or vaginal sex was 17 (inter-quartile range [IQR] 15-18) years for heterosexual-identifying bisexual men and 18 (IQR 17-19) years for other bisexual men ($p = 0.01$). Among heterosexual-identifying bisexual men, 49 (82%) reported first anal or vaginal sex with a female, three (5%) with a male, and eight (13%) with a kathoey. Among other bisexual men, 14 (50%) reported first sex with a female, 11 (39%) with a male, and three (11%) with a kathoey.

Table 9 Demographic comparison of heterosexual-identifying bisexual and other bisexual men

	Heterosexual-identifying bisexual men		Other bisexual men		*p*-value
	n	%	*n*	%	
Number of participants	60		28		
Age, median (IQR)	22	(20–24)	23	(20–25)	0.14
Higher education1	44	73	22	79	0.60
Currently studying	42	70	13	46	**0.03**
Currently employed	26	43	19	68	**0.03**
Single (never married)	58	97	26	93	0.42
Living arrangement					**< 0.01**
Live with parents	15	25	15	54	
Live with a relative	4	7	9	32	
Live with partner	3	5	0	0	
Share room or dormitory	33	55	4	14	
Other	5	8	0	0	
Originally from Vientiane	21	35	18	64	**0.01**

[1] Defined as reporting education beyond upper secondary school.

3.4.5 Past-year sexual behaviour

Based on the previous 12 months, 28 (47%) heterosexual-identifying bisexual men and 26 (93%) other bisexual men reported any male sex partners ($p < 0.01$); 40 (67%) and nine (32%) respectively reported any kathoey sex partners; and 58 (98%) and 20 (91%) respectively reported any female sex partners ($p = 0.01$)(note: one heterosexual-identifying and six other bisexual men had missing data on female partners and are included in the denominator for female partners) (Table 10).

Overall, 46 (77%) heterosexual-identifying bisexual men and 20 (71%) other bisexual men reported both male and kathoey and female sex partners in the previous 12 months. Of the 12 heterosexual-identifying bisexual men reporting only female anal and vaginal sex partners in the past year, 11 (92%) reported male or kathoey oral sex partners in the past year.

Heterosexual-identifying bisexual and other bisexual men reported a similar number of male (median of 5 and 5.5 respectively) and kathoey (median: 3) partners in the previous 12 months, but heterosexual-identifying bisexual men reported a higher number of female sex partners (median: five) than other bisexual men (median: two; $p < 0.01$) (Table 10). Although not reaching statistical significance, heterosexual-identifying bisexual men reported a higher number of sex partners overall (median: eight partners) than other bisexual men (median: 6.5, $p = 0.45$).

For all bisexual men, reported CCU was low with male (19%), kathoey (31%) and female partners (21%) and no difference was detected in CCU by identity (Table 10).

Table 10 Sexual behaviour in previous 12 months by partner gender among heterosexual-identifying bisexual and other bisexual men

	Heterosexual-identifying bisexual men		Other bisexual men		*p* value
	n	%	*n*	%	
Total	60		28		
Any male sex partners[1]	28	47	26	93	<0.01
Median number of male partners (IQR)	5	(2–10)	5.5	(5–13)	0.31
CCU with male partners[2]	5	18	5	19	0.90
Any kathoey sex partners[1]	40	67	9	32	<0.01
Median number of kathoey partners (IQR)	3	(2–10)	3	(2–6)	0.91
CCU with kathoey partners[2]	11	28	4	44	0.32
Any female sex partners[1,3]	58	98	20	91	0.12
Median number of female partners (IQR)	5	(3–11.5)	2	(2–3)	<0.01
CCU with female partners[2]	11	19	5	25	0.56
Median number of total sex partners[1] (IQR)	8	(4–24)	6.5	(5–10)	0.45

[1] Sex partners refer to anal or vaginal sex partners reported in the previous 12 months (excludes oral sex partners. [2] CCU: consistent condom use, defined as reporting always using condoms during anal and vaginal sex in the previous 12 months. [3] Percentage reporting any female partners includes missing responses in denominator given high proportion of missing data on female partners; missing in one (2%) heterosexual-identifying and 6(21%) other bisexual men.

Forty-three (72%) heterosexual-identifying bisexual men and 16 (57%) other bisexual men reported a regular sex partner in the previous 12 months ($p = 0.18$). A higher proportion of heterosexual - identifying bisexual than other bisexual men reported regular female (91% vs. 48%, $p < 0.01$) and regular kathoey (65% vs. 33%, $p = 0.02$) sex partners, while a higher proportion of other bisexual men reported regular male sex partners (94% vs. 44%, $p < 0.01$). Besides regular partners, bisexual men also reported casual (60%), paying (30%), paid (19%) and foreign (11%) sex partners in the previous 12 months; report of non-regular partners was similar between heterosexual-identifying and other bisexual men (Table 11). For both heterosexual-identifying bisexual and other bisexual men, reported CCU was lowest with regular partners (5% and 13% respectively, $p = 0.29$), and was relatively higher for casual partners (each 35%), paying partners (37% and 57% respectively, $p = 0.35$), paid partners (54% and 25% respectively, $p = 0.31$), and foreign sex partners (60% and 80% respectively, $p = 0.49$).

3.4.6 Sex position

Among heterosexual-identifying bisexual and other bisexual men reporting any male sex partners in the previous 12 months, 21 (75%) and four (15%) respectively reported usually having insertive sex; two (7%) and six (23%) respectively reported usually having receptive sex; and five (18%) and 16 (62%) respectively reported practicing role versatility (that is, versatility in being the insertive or receptive partner during sexual encounters during the previous 12 months) with male partners ($p < 0.01$).

Table 11 Sexual behaviour in previous 12 months by partner type among heterosexual-identifying bisexual and other bisexual men

	Heterosexual-identifying bisexual men		Other bisexual men		
	n	%	*n*	%	*p* value
Total	60		28		
Any regular sex partner[1]	43	72	16	57	0.18
Median number of regular partners (IQR)	6	(2–14)	5	(3–9)	0.59
CCU with regular partners[4]	2	5	2	13	0.29
Any casual sex partner[1]	40	67	20	74	0.49
Median number of casual partners (IQR)	6	(3–10)	7	(5–10)	0.54
CCU with casual partners[4]	14	35	7	35	1.00
Any paying sex partner[1,2]	19	32	7	25	0.52
Median number of paying partners (IQR)	5	(3–9)	8	(5–15)	0.45
CCU with paying partners[4]	7	37	4	57	0.35
Any paid sex partner[1,3]	13	22	4	14	0.41
Median number of paid partners (IQR)	3.5	(1–5)	5	(2–15)	0.39
CCU with paid partners[4]	7	54	1	25	0.31
Any foreign sex partner[1]	5	8	5	18	0.19
Median number of foreign partners (IQR)	2	(1–3)	14	(2–27)	0.26
CCU with foreign partners[4]	3	60	4	80	0.49

[1] Sex partners refer to anal or vaginal sex partners reported in the previous 12 months (excludes oral sex partners). [2] A paying sex partner is someone who gave money, gifts, or favours to the respondent in exchange for sex. [3] A paid sex partner is someone to whom to respondent gave money, gifts, or favours in exchange for sex. [4] CCU: Consistent condom use, defined as reporting always using a condom with all sex partner(s) in the previous 12 months. IQR: inter-quartile range.

Among heterosexual-identifying bisexual and other bisexual men reporting any kathoey sex partners in the previous 12 months, 37 (93%) and six (67%) respectively reported usually having insertive sex; one (3%) and zero respectively reported usually having receptive sex; and two (5%) and three (33%) respectively reported practicing role versatility with kathoey partners ($p = 0.04$).

Among 78 men reporting any female sex partners in the previous 12 months, all reported vaginal sex and 36 (62%) heterosexual-identifying bisexual and nine (45%) other bisexual men also reported any anal sex with female partners ($p = 0.03$). Both heterosexual-identifying bisexual and other bisexual men reported slightly lower CCU during anal sex with females (both 11%) than during vaginal sex (19% and 30% respectively, both $p \geq 0.27$).

3.4.7 Alcohol and other drugs

Thirty-two (53%) heterosexual-identifying bisexual men and eight (29%) other bisexual men reported drinking alcohol weekly or more ($p = 0.03$). More heterosexual-identifying bisexual than other bisexual men reported always or almost always drinking alcohol before having sex with female (45% vs. 10%, $p = 0.01$), male (54% vs. 23%, $p = 0.02$) and kathoey (65% vs. 33%, $p = 0.08$) sex partners.

Seven (12%) heterosexual-identifying bisexual men and one (4%) other bisexual men reported using illicit drugs in the previous 12 months ($p = 0.22$).

Reported CCU with all sex partners was lower among bisexual men reporting consuming alcohol weekly or more (5%) compared to those reporting drinking less often than weekly (21%, $p = 0.03$) (Table 12).

Table 12 Associations with CCU in all bisexual men ($n = 88$)

		Total	CCU[1]		
		n	*n*	%	*p*-value
Sexual identity	Heterosexual-identifying bisexual	60	7	12	
	Other bisexual	28	5	18	
					0.43
Originally from Vientiane	Yes	39	5	13	
	No	49	7	14	
					0.84
Higher education[2]	Yes	66	11	17	
	No	22	1	5	
					0.15
Currently employed	Yes	45	6	13	
	No	43	6	14	
					0.93
Frequency of alcohol consumption	Less than weekly[3]	48	10	21	
	Weekly or more	40	2	5	
					0.03
Age at first sex[4]	< 18 years	44	5	11	
	≥ 18 years	42	7	17	
					0.48
All HIV knowledge questions correct	Yes	27	7	26	
	No	61	5	8	
					0.03

[1] CCU: Consistent condom use, defined as reporting always using a condom with all sex partner(s) in the previous 12 months. [2] Higher education defined as any education beyond upper-secondary school. [3] Less than weekly includes those who report never consuming alcohol in the previous 12 months. [4] Age at first anal or vaginal sex. Significant *p* values ($p < 0.05$) shown in boldface.

3.4.8 HIV knowledge

The median number of HIV knowledge questions answered correctly (out of eight) was seven among heterosexual-identifying bisexual men and eight among other bisexual men ($p < 0.01$). For example, among heterosexual-identifying bisexual and other bisexual men: 92% and 93% respectively knew that using condoms during vaginal sex can reduce risk of HIV transmission ($p = 0.85$); 83% and 100% respectively knew that using condoms during anal sex can reduce risk of HIV transmission ($p = 0.02$); 73% and 89% respectively knew that a healthy looking person can have HIV ($p = 0.09$); and 72% and 79% respectively knew that having only one faithful, uninfected partner can reduce the risk of HIV transmission ($p = 0.49$).

Overall, 12 (20%) heterosexual-identifying bisexual men and 15 (54%) other bisexual men answered all questions correctly ($p < 0.01$). Among all bisexual men, those answering all HIV knowledge questions correctly reported higher CCU (26%) with all sex partners compared to those who did not answer all questions correctly (8%; $p = 0.03$, Table 12).

3.5 Discussion

This study examined behaviour in bisexual men in Vientiane, Laos and compared behaviour and risk in other and heterosexual-identifying bisexual men. High partner numbers and low condom use were commonly reported, irrespective of identity, enhancing risk of acquisition and transmission of HIV and other STIs.

A key study finding was the low level of CCU reported by both heterosexual-identifying bisexual and other bisexual men. While we could not detect a significant difference in CCU by identity, there was a tendency towards lower CCU with kathoey and female partners among heterosexual-identifying bisexual men compared to other bisexual men. Although low across partner genders and types, CCU was lowest with regular partners. This is a common finding in many settings, given regular partners are often indicative of emotional commitment, and thus condom use may be considered unnecessary due to perceived lower risk, or avoided due to perceived implication that condom use implies unfaithfulness and undermines trust [42, 175]. Notably, in our sample half of bisexual men reported six or more regular partners in the past 12 months. High partner numbers could be indicative of either high turnover of partners or concurrent partnerships—both of which increase risk of HIV and STI transmission, particularly given low condom use. These findings support those reported from Vietnam [119] and emphasize the importance of extending HIV prevention efforts to men in relationships rather than only focusing on casual or transactional sex partners, who are more commonly the focus of HIV campaigns.

The gender profile of sexual partners differed between heterosexual-identifying bisexual and other bisexual men. Firstly, other bisexual men were more likely to report male sex partners, while heterosexual-identifying bisexual men were more likely to report kathoey sex partners. Previous studies in Laos have reported that men may not consider having sex with kathoey (who appear and act as women) a threat to their masculinity [4]. Nonetheless, while men might not consider this as homosexual behaviour, it poses the same high risks of HIV and other STI transmission. Of note, heterosexual-identifying bisexual men reported substantially lower CCU with kathoey partners than other bisexual men, although this is based on small numbers. Secondly, heterosexual-identifying bisexual men reported a significantly higher number of female partners than other bisexual men and were more likely to report a regular female partner. There is currently limited evidence of a bridging effect through bisexual men from high to low risk populations [47, 122, 299, 312, 345, 346]. Nonetheless, given the low condom use and high number of partners reported by bisexual men as compared to behaviourally homosexual and heterosexual men [reported in 343], there is potential for bisexual men to increase HIV and STI transmission within their diverse sexual networks, including to female sexual partners. This effect may be enhanced in the context of high partner turnover, which was more evident in the heterosexual-identifying bisexual men.

Alcohol use is often linked to increased sexual risk behaviour, particularly among men who have sex with men [347]. Although we did not establish consumption quantity, heterosexual-identifying men reported consuming alcohol more frequently than other bisexual men, and were more likely to report commonly consuming alcohol before sex. Furthermore, men reporting weekly alcohol use reported

lower CCU with all partners compared to men drinking less frequently. It was not possible to determine whether this was due to alcohol-associated disinhibition or situational, given socialising in Laos often occurs in drink-shops (casual restaurant/bar where beer is usually consumed) and bars, which are also common locations for men to meet sex partners [153]. Nonetheless, the potential role of alcohol highlights a need for health promotion targeting alcohol use and condom use through, for example, education or setting-based interventions. Further research is needed to explore this issue of interaction between where people socialize, consume alcohol, and engage in sexual activity.

Although HIV knowledge was generally high, heterosexual-identifying bisexual men reported lower knowledge than other bisexual men. In particular, they were less likely to recognise the benefits of condoms during anal sex, which may be indicative of lower access to education and prevention efforts aimed at men who have sex with men. This a likely a result of the historical nature of HIV prevention in Laos; early surveillance and prevention initiatives have focused on transactional sex and heterosexual transmission[161, 172]; and mainstream education and prevention do not refer to anal sex and male-to-male sexuality, which are restricted to targeted campaigns only [4](key informant SGD, personal communication, 1 Oct 2013). This finding supports the call for discussion on anal sex to be incorporated into HIV prevention education targeting all young people in Laos, rather than limited to initiatives specific to men who have sex with men, in order to reach more hidden groups of bisexual men [48]. Men with incorrect HIV knowledge reported lower CCU than men who answered all questions correctly. While this substantiates the need for accurate information on HIV to be provided to men in order to convey the importance and benefits of CCU, it remains that even among men answering all HIV knowledge questions correctly, CCU was low, suggesting that there are other influences on behaviour than knowledge of HIV transmission.

More heterosexual-identifying bisexual than other bisexual men reported only usually having insertive sex with both male and kathoey partners, while more other bisexual men reported versatile positioning. The more frequent report of insertive sex among heterosexual-identifying men supports the qualitative findings of this and previous studies, which frequently voice the preference of 'full men' (who are generally considered straight or heterosexual in sexual orientation as opposed to behaviour) for insertive sex with kathoey in order to maintain self-notions of masculinity [4, 348], and also preference of kathoey for receptive sex to preserve self-notions of femininity [4]. Nonetheless, receptive anal sex was part of the usual practice of one-quarter of heterosexual-identifying bisexual men, and most other bisexual men. The observed role versatility may enhance the spread of HIV within the sexual network [349-351] given receptive sex poses higher probability of HIV transmission [194, 352], and men with versatile positioning are hence more likely to become infected during receptive sex, and then transmit HIV to their partners during unprotected insertive sex. The risk of HIV and STI transmission through unprotected receptive sex needs to be clearly communicated; however it is important that the risk associated with receptive sex does not underplay the risks associated with insertive anal sex and feed the common misperception that insertive anal sex poses minimal or no risk [353].

Heterosexual-identifying bisexual and other bisexual men differed in terms of age, living arrangements and engagement in work and study. These differences are likely interrelated, but possible explanations

might include that younger men may be more likely to experiment sexually and question their identity; that same-sex attraction or behaviour is potentially stigmatized in the education or dormitory environment, inhibiting open disclosure of identity in these environments; or that men in dormitories are more motivated by economic relations than sexuality and attraction [4]. Irrespective of reasoning, dormitories and higher education facilities may be useful settings for reaching bisexual men for preventive health initiatives, particularly heterosexual-identifying men who were more likely to be currently studying and living in a dormitory. Further qualitative enquiry is needed to better understand these influences and the acceptability of promoting HIV awareness, knowledge, and prevention in these environments.

There are a number of limitations to this study. Firstly, participants were recruited through snowball sampling, a non-probability sampling method, and the findings may not be representative of the broader population in Vientiane. Detection of differences by identity may be limited by the relatively small sample size. Nonetheless, the study design enabled access a hard-to-reach group of behaviourally bisexual men. Secondly, the cross-sectional design precludes determination of causality. Thirdly, risk behaviour data was collected through self-report and reliability cannot be established; data may be subject to social desirability or recall bias. However, computer assisted self-administered surveys, including PDAs as used in this survey, have been found to increase accuracy of reporting and response rate compared to face-to-face interviewing [354]. Fourthly, the derived number of total, male, female, and kathoey sex partners may be overestimated given foreign partners may not be mutually exclusive of other partner types, but any overestimation is expected to be minimal. Finally, the Kinsey scale has not been validated in Lao, and heterosexuality and homosexuality are not innate concepts in Lao culture [48], with potential for misclassification of sexual orientation. However, the Kinsey scale allows identity to be assessed across a continuum and allows results to be compared across settings [355]; this would not have been possible if a system of discrete identity categories were devised specific to Lao culture.

3.6 Conclusion

In conclusion, our study confirms reports that bisexual men have diverse sexual identities, with a large proportion identifying as heterosexual. We identified widespread report of multiple partners and inconsistent condom use, placing bisexual men and their sexual partners at increased risk of HIV and STI transmission. Targeted interventions are particularly needed to reach heterosexual-identifying bisexual men, who reported lower HIV knowledge, more risky alcohol consumption, and more female sex partners. Internationally there are minimal evaluated initiatives targeting heterosexual-identifying bisexual men, and further research is needed to determine how best to target and reach this population group. Initiatives should not neglect the importance of regular partnerships, which may be as risky as casual and transactional sex encounters in this population.

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Chapter Four

4 . Settings for meeting sex partners among bisexual men in Laos

Chapter 3 established a need for improved HIV prevention and sexual health promotion targeting behaviourally bisexual men in Vientiane. A key finding was that targeted interventions are needed to reach heterosexual-identifying bisexual men, who reported lower HIV knowledge, more risky alcohol consumption, and more female sex partners.

Previous international studies have demonstrated that settings for meeting sex partners may influence risk behaviour among MSM, such as the consumption of alcohol before sex, condom use, number of sex partners, and disclosure of HIV status. This knowledge has been applied to health promotion initiatives by using particular settings to reach men with high-risk behaviour. However, most studies looking at settings in terms of both risk and interventions have focused on self-identifying gay men, and it is not clear how the settings approach will apply to Laos where there are fewer spaces specific to gay or other MSM.

Chapter 4 builds upon the prior findings by considering where behaviourally bisexual men meet their sex partners in Vientiane and associations between settings and risk. Further, it considers how a setting-based approach may be used to reach behaviourally bisexual men in Laos, particularly those who are heterosexual-identifying.

This is the second chapter based off the quantitative sexual networking study conducted in 2010. As in the previous chapter, it is based off a sub-sample of the total study sample; of 298 participants connected through the sexual networks of bisexual men, 189 were male and 88 were behaviourally bisexual men and are included in this analysis. This chapter represents the following published paper:

> Bowring AL, van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Phimphachan C, et al. Setting the scene: locations for meeting sex partners among behaviourally bisexual men in Vientiane, Laos, and opportunities for health promotion. *AIDS Educ Prev*. 2014;26(6):538-53.

Declaration for Thesis Chapter Four

MONASH UNIVERSITY
Declaration by candidate

In the case of Chapter 4, the nature and extent of my contribution to the work was the following:

Nature of contribution	**Extent of contribution (%)**
Data analysis, results interpretation, manuscript preparation and review	65%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	**Nature of contribution**	**Extent of contribution (%)***
Caroline van Gemert	Study design, study coordination, manuscript review	10%
Kongchay Vongsaiya	Study coordination, study collection, manuscript review	N/A
Chad Hughes	Study design, manuscript review	N/A
Amphoy Sihavong	Local technical oversight, manuscript review	N/A
Chansy Phimphachanh	Local technical oversight, manuscript review	N/A
Niramonh Chanlivong	Study coordination, manuscript review	N/A
Paul Agius	Data analysis, manuscript review	N/A
Mike Toole	Study design, manuscript review	N/A
Margaret Hellard	Study design, manuscript review	N/A

* For student co-authors only

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work.

Candidate's Signature [redacted] **Date** 11/9/2015

Main Supervisor's Signature [redacted] **Date** 11/9/2015

Setting the scene: locations for meeting sex partners among behaviourally bisexual men in Vientiane, Laos, and opportunities for health promotion

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4.1 Abstract

Behaviourally bisexual men (BBM) in Vientiane, Laos report high-risk sexual behaviours. We explore settings for meeting sex partners and associated risk behaviours among BBM in Laos. BBM and their sexual partners were recruited in Vientiane Capital using modified snowball sampling (2010). Settings for usually meeting sex partners and associations with risk behaviours were assessed. Among 88 BBM, the most common settings for men meeting male, kathoey and female sex partners were private residences (48%, 37%, 51% respectively) and hospitality settings (39%, 31%, 40% respectively). Hospitality settings were more commonly reported by heterosexual-identifying BBM, and private residences more commonly reported by bisexual/homosexual-identifying BBM. Inconsistent condom use was high across partners and settings. Meeting partners in hospitality settings was associated with reporting a high number of female sex partners and frequently drinking alcohol before sex. Our results suggest that targeted health promotion initiatives in bars, clubs and beer-shops could reach a high proportion of high-risk bisexual men, particularly heterosexual-identifying BBM.

4.2 Introduction

In Lao People's Democratic Republic (herein referred to as Laos), behaviourally bisexual men are an important sub-group of men who have sex with men. A substantial proportion of men who have sex with men also report sex with women [48, 356], and many of these men identify as exclusively or predominantly heterosexual [318]. A recent study by our group showed that in Vientiane, the capital of Laos, behaviourally bisexual men interlink sexual networks of men who only have sex with men, kathoey (male-to-female transgender women), heterosexual men, and women [343]. Further, behaviourally bisexual men report high risk behaviours for HIV and other sexually transmitted infections (STIs), including low rates of consistent condom use with their male, kathoey and female sex

partners, multiple sex partners in the past year, and sexual risk behaviour associated with frequent alcohol consumption [318]. Whilst HIV prevalence in Laos is low (0.2% in the general population) [342], men who have sex with men are at increased risk of HIV infection and other sexually transmitted infections (STIs), with HIV prevalence estimated at 5.6% among men who have sex with men in Vientiane [48]. There is concern that HIV prevention measures may not be reaching key sub-groups engaging in high-risk behaviours, including behaviourally bisexual men.

The settings where sex partners are met, including physical locations and virtual settings, and where sex encounters occur, may influence risk [357]. Settings can be characterised by their physical, social and cultural environment, which may interact and may influence behaviour and resulting risk [357]. For example, physical environment can dictate access to alcohol or availability of dark, concealed spaces; social environment defines social structures, memberships to a particular group such as a gay subculture, and the way that people interact and socialise in a given setting; and cultural environment influences through social and cultural norms, such as acceptance or stigmatisation of sexual minorities. In some instances, the setting for meeting sex partners will overlap with where sex occurs whilst in other cases, sex will occur in a different location, either immediately or delayed until a later time or date.

Previous international studies of men who have sex with men, predominantly originating from the United States (U.S.) as well as China, demonstrate associations between settings for meeting sex partners (or alternatively, recruitment venues) and alcohol consumption, the likelihood of disclosing HIV status, condom use, number of partners, and type of sex [358-371]. However, these associations are not consistently identified across studies or settings, and the generalisability to diverse international settings and communities is unclear [372]. Further, most of these studies have been dominated by self-identifying gay men, and correlations to behaviourally bisexual men is uncertain. Behaviourally bisexual men may attend and interact with settings differently to other men who have sex with men, depending on their sexual identity, connectedness with similarly behaving men, and level of attraction to men, kathoey and women.

In Laos, information obtained from qualitative research of behaviourally bisexual men suggests that condom use may be influenced by the location for meeting sex partners or where sex happens [348]. For example, men reported being more likely to use condoms with partners met in hospitality settings (e.g. nightclubs, bars) and sex-on-premises type venues (e.g. massage parlours, brothels), given sex partners met in these settings were perceived to be more promiscuous [348]. Behaviourally bisexual men commonly reported that they were less likely to use condoms when sex occurred in public settings such as parks or toilets, given sex was often rushed in these circumstances [348].

If setting plays a role in influencing risk, it follows that certain settings may be useful forums for undertaking sexual health promotion and HIV prevention. Informed by information on where gay men meet sexual partners, successful sexual health promotion and education services have been undertaken internationally in bathhouses, commercial sex venues [234, 235, 373-376], and bars and clubs [229, 377, 378] incorporating condom distribution, health and prevention education, onsite HIV and STI testing and peer-led initiatives.

In order to inform public health interventions to better target behaviourally bisexual men in Vientiane, this paper focuses on identifying the settings where these men meet their sex partners and exploring risk behaviours in the context of settings.

4.3 Methods

4.3.1 Study design

A retrospective cross-sectional behavioural survey was conducted with people linked via sexual contact in Vientiane, the capital of Laos, between June and October 2010.

4.3.2 Sampling and study population

Recruitment methods have been described previously [318, 343]. In brief, starting with ten male seeds reporting sex with men and women in the previous 12 months, behaviourally bisexual men and their sexual networks were recruited in Vientiane Capital via enhanced snowball sampling. Each participant could nominate up to five of their sex partners for recruitment, for up to three waves of recruitment. Participants were required to be aged 18 years and above.

4.3.3 Data collection

Trained field researchers recruited participants and obtained informed consent. Participants self-completed a sexual behavioural questionnaire in Lao language using a hand-held computer programmed with Microsoft Visual Studio; if required, field researchers were available to assist with electronic entry. Questionnaires took approximately 30 minutes to complete, and participants were reimbursed the equivalent of approximately U.S. $2.50.

Information on demographic and sexual behaviour was collected, including lifetime and past year sexual contact with males, females and male-to-female transgender women (commonly known as 'kathoey teng ying' or 'kathoey phom yao' in Laos and herein referred to as 'kathoey') and sexual contact with regular, casual, paid, paying and foreign partners.

4.3.4 Measurement

Sexual behaviour was categorized based on male participants' reporting of anal or vaginal sex during their lifetime: behaviourally homosexual (report sex with men and/or kathoey only), behaviourally heterosexual (report sex with females only) and behaviourally bisexual (report sex with women and men and/or kathoey). For the purpose of brevity, throughout the remainder of the paper behaviourally bisexual men will be referred to as bisexual men.

Sexual identity was categorised using the Kinsey Scale, a seven-point scale of sexual orientation [87]. Bisexual men were classified as *heterosexual-identifying* if they reported being exclusively or predominantly heterosexual (Kinsey 0–2) and *bisexual/homosexual-identifying* if they reported being bisexual, predominantly homosexual or exclusively homosexual (Kinsey 3–6).

Settings

Settings for meeting sex partners were assessed using multiple choice questions asking participants to identify the location where they usually met regular, casual, paid, paying and foreign sex partners of male, female, and kathoey gender in the previous 12 months. For analysis, responses were collapsed by partner's gender and settings were grouped as: private residence (friend's house, unit rental, dormitory), hospitality settings (bar, club, pub, beer shop, restaurant, café), public space (park, football ground, movies, shops near factory), sex-on-premises (brothel, massage parlour, sauna, hotel) and other (internet, telephone, other unspecified). The resulting binary variables were defined as if usually meets male/female/kathoey partners in the specified setting. Setting variables are not mutually exclusive and a participant may report multiple settings in which they meet sex partners for a given partner gender. In Laos, dormitories are low-cost accommodations based at education institutions and available to students who have moved to a town or city for education purposes [4]. The category sex-on-premises type settings has been used because prostitution is illegal in Laos, and brothels per se are rare; transactional sex is frequently initiated from drink-shops, nightclubs and guesthouses [136, 153, 175, 184]. We have categorized sex-on-premises type settings to reflect settings where sex is more likely to happen on premises and have maintained a separate category for hospitality settings where transactional sex may also be initiated.

Sexual behaviour and drinking

Sex partners refers to partners with whom the participant had anal or vaginal sex (excludes oral sex partners) in the previous 12 months. *Inconsistent condom use* was defined as reporting not always using a condom during anal and vaginal sex in the previous 12 months. *High number of sex partners* was defined as reporting more than the gender-specific median number of sex partners in the previous 12 months amongst participants reporting any sex partners of that gender. *Frequently drinking alcohol before sex* was defined as always, or almost always, consuming alcohol before sex with male, female, or kathoey partners in the previous 12 months.

4.3.5 Analysis

Analyses were limited to bisexual males only. Seeds are included in the final analysis. Setting and risk were explored in two parts:

1. Prevalence of meeting male, kathoey and female sex partners across settings was estimated and differences by sexual identity assessed using design corrected $\chi 2$-tests of independence.
2. Stratifying by partner gender, differences in risk behaviours (inconsistent condom use, high number of sex partners, and frequently drinking alcohol before sex) of all bisexual men were compared across private residence, hospitality, public spaces, sex-on-premises type, and other settings.

Proportions presented are based on the number of participants responding to a question with missing data excluded. In all analyses, estimated standard errors took account of the seed clustering due to snowball sampling and significance assessed at the 5% level. In all comparative tests, p-values and

adjusted χ^2 (transforms to an *F*-statistic) statistics were reported. 95% confidence intervals (CI) were estimated for prevalence estimates.

Data were analysed using Stata (Version 11, Stata Corp., College Station, Texas, USA).

4.3.6 Ethics

Ethical approval was obtained from the Alfred Hospital Ethics Committee, the Ethical Review Committee of the Australian National University, and the National Ethics Committee for Health Research of the Lao PDR.

4.4 Results

4.4.1 Participant description

In total 298 individuals were recruited; 189 were males of whom eight were excluded due to incomplete data on gender of lifetime sex partners. Eighty-eight (49%) men were defined as bisexual based on lifetime sexual behaviour. The median age of these men was 22 years, 66 (75%) had completed higher education, 55 (63%) were currently studying (93% studying at university, 7% studying at technical college), 45 (51%) were currently employed, four (5%) had ever been married, and 39 (44%) were originally from Vientiane Capital. The majority of bisexual men shared a room or dormitory (42%) or lived with parents (34%) (Table 13). Of the 88 bisexual men, 60 (68%) were heterosexual-identifying and 28 (32%) were bisexual/homosexual-identifying.

4.4.2 Sexual behaviour in the previous 12 months

Sixty-six (75%) of the 88 bisexual men reported bisexual behaviour in the past year. Fifty-four (61%) reported having a male sex partner, 49 (56%) reported a kathoey sex partner, and 78 (96%) reported a female sex partner in the previous 12 months (Table 14). More heterosexual-identifying men (67%) than bisexual/homosexual-identifying men (32%) reported a kathoey sex partner, but this difference was not statistically significant ($p = 0.07$). Bisexual men who were heterosexual-identifying (47%) were less likely than those who were bisexual/homosexual-identifying (93%) to report a male sex partner in the past 12 months ($p < 0.01$) (Table 14).

4.4.3 Settings for meeting sex partners

The most common settings for meeting male sex partners were private residences (48%) and hospitality settings (39%), followed by sex-on-premises type settings (24%), other settings (13%) and public spaces (9%) (Table 14). Of bisexual men, more heterosexual-identifying men (57%) than bisexual/homosexual-identifying men (19%) reported meeting male partners in hospitality settings ($p = 0.03$), while more bisexual/homosexual-identifying men (73%) than heterosexual-identifying men (25%) reported meeting male partners in private residences ($p = 0.03$) (Table 14).

Table 13 Demographic characteristics of bisexual men

	Bisexual men	
	n	%
Total	88	100
Age, median (IQR)	22	(20–24)
Currently studying	55	62.5
Completed higher education[a]	66	75.0
Currently employed	45	51.1
Ever been married	4	4.6
Have children	4	4.6
Originally from Vientiane	39	44.3
Living arrangement		
Share room or dormitory	37	42.1
Live with parents	30	34.1
Live with relative/s	13	14.8
Live with partner	3	3.4
Live alone	2	2.3
Other	3	3.4

[a] Higher education defined as any education beyond upper-secondary school

The most common settings for meeting kathoey sex partners were private residences (37%) and hospitality settings (31%), followed by sex-on-premises type settings (22%), other settings (20%) and public spaces (4%). No differences in settings for meeting kathoey partners by sexual orientation were identified (all $p \geq 0.15$) (Table 14).

The most common settings for meeting female sex partners were private residences (51%) and hospitality settings (40%), followed by sex-on-premises type settings (13%), other settings (13%) and public spaces (10%) More heterosexual-identifying bisexual men (50%) than other bisexual men (10%) reported meeting female partners in hospitality settings ($p = 0.02$) (Table 14).

Among men reporting meeting male (n=7), kathoey (n=10) and female (n=10) partners in other settings: four men reported using phones and no men reported using the internet to meet male partners; three men reported using phones and two men reported using the internet to meet kathoey partners; and four men reported using phones and no men reported using the internet to meet female partners.

Table 14 Usual setting for meeting male, kathoey and female sex partners in the previous 12 months overall and by self-identified sexual orientation

		Overall			Heterosexual-identifying[h]		Bisexual/ homosexual-identifying[i]			
		n	**%**	**(95%CI)**	***n***	**%**	***n***	**%**	***F*-statistic[j]**	***p*-value**
Male sex partner	Any male sex partner[a]	54	61.4	(37.7, 80.7)	28	46.7	26	92.9	10.62	**< 0.001**
	Private residences[b]	26	48.2	(30.4, 6.4)	7	25.0	19	73.1	6.54	**0.031**
	Hospitality[c]	21	38.9	(24.5, 55.6)	16	57.1	5	19.2	6.77	**0.029**
	Public spaces[d]	5	9.3	(3.3, 23.4)	4[11]	14.3	1[11]	3.9	2.15	0.177
	Sex-on-premises[e]	13	24.1	(13.6, 39.0)	6	21.4	7	26.9	0.34	0.575
	Other[f]	7	13.0	(4.7, 31.2)	5	17.9	2[11]	7.7	1.42	0.263
Kathoey sex partner	Any kathoey sex partner[a]	49	55.7	(30.3, 78.4)	40	66.7	9	32.1	4.32	0.067
	Private residences[b]	18	36.7	(22.5, 53.7)	14	35.0	4[11]	44.4	0.37	0.560
	Hospitality[c]	15	30.6	(14.8, 52.8)	14	35.0	1[11]	11.1	2.42	0.154
	Public spaces[d]	2[11]	4.1	(0.9, 16.5)	2[11]	5.0	0[11]	0.0	0.34	0.577
	Sex-on-premises[e]	11	22.5	(11.4, 39.5)	8	20.0	3[11]	33.3	1.12	0.318
	Other[f]	10	20.4	(11.0, 34.8)	8	20.0	2[11]	22.2	0.02	0.886
Female sex partner	Any female sex partner[a,g]	78	96.3	(86.3, 99.1)	58	98.3	20	90.9	2.60	0.141
	Private residences[b]	40	51.3	(36.9, 65.5)	27	46.6	13	65.0	0.86	0.377
	Hospitality[c]	31	39.7	(30.9, 49.3)	29	50.0	2[11]	10.0	8.21	**0.019**
	Public spaces[d]	8	10.3	(4.0, 24.1)	7	12.1	1[11]	5.0	0.70	0.424
	Sex-on-premises[e]	10	12.8	(6.5, 23.6)	8	13.8	2[11]	10.0	0.17	0.687
	Other[f]	10	12.8	(4.7, 30.3)	8	13.8	2[11]	10.0	0.08	0.780

[a] Sex partner refers to any anal or vaginal sex partners in the previous 12 months. [b] Private residences includes friend's house, unit rental, and dormitory. [c] Hospitality settings includes bar, club, pub, beer shop, restaurant and café.[d] Public spaces includes parks, football ground, movies, shops near factory. [e] Sex-on-premises type settings includes brothel, massage parlour, sauna and hotel. [f] Other settings includes internet, telephone, and other unspecified. [g] Missing data is excluded from denominator. Response to female sex partner in past year missing in 7 cases. [h] *Heterosexual-identifying* refers to behaviourally bisexual men who self-identified as exclusively or predominantly heterosexual on the Kinsey scale. [i] *Bisexual/homosexual-identifying* refers to behaviourally bisexual men who self-identified as bisexual, predominantly or exclusively homosexual on the Kinsey scale. [j] Degrees of freedom = $F(1,9)$[k] Note, small cell sizes ($n < 5$) should be interpreted with caution. Significant p-values (< 0.05) shown in boldface.

4.4.4 Associations with risk behaviour by setting

Inconsistent condom use

Report of inconsistent condom use was high across settings and partner genders, ranging from 46% with kathoey partners met in sex-on-premises type settings to 100% in some settings (note small cell sizes) (Table 15). No significant differences were found in inconsistent condom use by usual setting for meeting sex partners (all $p > 0.05$) (Table 15).

Number of sex partners

Among men reporting any sex partners of the given gender in the previous 12 months, bisexual men reported a median of five male (inter-quartile range [IQR] 4–10), three kathoey (IQR 2–10) and five female (IQR 2–11) sex partners in the previous 12 months. Number of male, kathoey, and female sex partners was missing for six (11%), six (12%) and 13 (17%) bisexual men, respectively.

No significant differences were detected in reporting a high number of male or kathoey sex partners (more than median number) by settings for meeting respective partners (all $p > 0.05$). A relatively higher proportion of men usually meeting male partners in sex-on-premises type settings reported a high number of male partners (75%) than men not meeting male partners in sex-on-premises type settings (36%, $p = 0.08$) (Table 15).
A higher proportion of men reporting usually meeting female sex partners in hospitality settings reported a high number of female partners (56%) compared to men not reporting meeting female sex partners in hospitality settings (29%, $p = 0.04$) (Table 15).

Frequently drinking alcohol before sex

A higher proportion of men reported frequently drinking alcohol before sex with kathoey sex partners (59%) compared to before sex with male partners (39%, $p = 0.04$) and female partners (36%, $p = 0.01$).

A higher proportion of men reporting meeting male sex partners in hospitality settings reported frequently drinking alcohol before sex (67%) compared to men not reporting meeting male partners in hospitality settings (21%, $p = 0.04$).

No significant differences were found in the proportion of men frequently drinking before sex with kathoey partners by setting, but a relatively higher proportion of men meeting kathoey sex partners in sex-on-premises type settings reported frequently drinking alcohol before sex (73%) than men not usually meeting kathoey partners in sex-on-premises settings (55%, $p = 0.07$).

No significant differences were found in the proportion of bisexual men frequently drinking before sex with female partners by setting, but a relatively higher proportion of men reporting meeting females in hospitality settings reported frequently drinking before sex (55%) than men not usually meeting females in hospitality settings (23%, $p = 0.09$).

Table 15 High-risk behaviours in relation to settings for usually meeting sex partners, stratified by partner gender

		Usually meets partner in setting		Inconsistent condom use[g]				High number of sex partners[h]				Frequently drinks before sex[i]			
			n	*n*	%	*F*-statistic[j]	*p*-value	*n*	%	*F*-statistic[j]	*p*-value	*n*	%	*F*-statistic[j]	*p*-value
Male sex partner[a]	Private residences[b]	Yes	26	22	84.6	1.11	0.319	13	54.2	3.15	0.110	7	26.9	1.29	0.286
		No	28	22	78.6			9	37.5			14	50.0		
	Hospitality[c]	Yes	21	18	85.7	0.75	0.408	10	50.0	0.22	0.650	14	66.7	6.10	**0.036**
		No	33	26	78.8			12	42.9			7	21.2		
	Public spaces[d]	Yes	5	5	100.0	1.55	0.244	2[k]	50.0	0.05	0.828	3[k]	60.0	1.55	0.245
		No	49	39	79.6			20	45.5			18	36.7		
	Sex-on-premises[e]	Yes	13	10	76.9	0.13	0.726	9	75.0	3.97	0.078	6	46.2	0.38	0.553
		No	41	34	82.9			13	36.1			15	36.6		
	Other[f]	Yes	7	5	71.4	0.99	0.346	2[k]	40.0	0.10	0.759	1[k]	14.3	2.46	0.151
		No	47	39	83.0			20	46.5			20	42.6		
Kathoey sex partner[a]	Private residences[b]	Yes	18	11	61.1	1.25	0.292	8	47.1	0.95	0.949	10	55.6	0.10	0.757
		No	31	23	74.2			12	46.2			19	61.3		
	Hospitality[c]	Yes	15	12	80.0	1.10	0.322	7	58.3	2.30	0.164	9	60.0	0.02	0.897
		No	34	22	64.7			13	41.9			20	58.8		
	Public spaces[d]	Yes	2[11]	2[11]	100.0	0.43	0.526	1[k]	100.0	1.22	0.298	1[k]	50.0	0.07	0.804
		No	47	32	68.1			19	45.2			28	59.6		
	Sex-on-premises[e]	Yes	11	5	45.5	2.94	0.121	4[k]	36.4	0.77	0.404	8	72.7	4.13	0.073
		No	38	29	76.3			16	50.0			21	55.3		
	Other[f]	Yes	10	8	80.0	1.30	0.284	3[k]	37.5	0.24	0.633	5	50.0	0.67	0.433
		No	39	26	66.7			17	48.6			24	61.5		
Female sex partner[a]	Private residences[b]	Yes	40	33	82.5	0.67	0.433	13	38.2	0.05	0.825	14	35.0	0.02	0.892
		No	38	29	76.3			13	41.9			14	36.8		
	Hospitality[c]	Yes	31	25	80.7	0.09	0.771	15	55.6	6.10	**0.036**	17	54.8	3.58	0.091
		No	47	37	78.7			11	29.0			11	23.4		
	Public spaces[d]	Yes	8	7	87.5	0.40	0.544	3[k]	50.0	0.22	0.652	2[k]	25.0	0.49	0.504
		No	70	55	78.6			23	39.0			26	37.1		
	Sex-on-premises[e]	Yes	10	7	70.0	2.51	0.147	6	66.7	1.76	0.217	5	50.0	0.50	0.496
		No	68	55	80.9			20	35.7			23	33.8		
	Other[f]	Yes	10	10	100.0	1.51	0.251	4[k]	66.7	1.32	0.281	2[k]	20.0	1.68	0.227
		No	68	52	76.5			22	37.3			26	38.2		

[a] Sex partner refers to any anal or vaginal sex partner/s in the previous 12 months. [b] Private residences includes friend's house, unit rental, and dormitory. [c] Hospitality settings includes bar, club, pub, beer shop, restaurant and café. [d] Public spaces includes parks, football ground, movies, shops near factory. [e] Sex-on-premises type settings includes brothel, massage parlour, sauna and hotel. [f] Other settings includes internet, telephone, and other unspecified. [g] Inconsistent condom use, reports not always using a condom during anal and vaginal sex with partners of given gender in the previous 12 months. [h] High number of sex partners defined as reporting more than the gender-specific median of sex partners; male partners: >5; kathoey partners: >3; female partners: >5. Number of male, kathoey, and female sex partners was missing for six (11%), six (12%) and 13 (17%) bisexual men, respectively. [i] Frequently drinks before sex defined as always or almost always drinking alcohol before sex with partner of given gender. [j] Degrees of freedom = $F(1,9)$. [k] Note small cell size ($n < 5$). Significant *p*-values ($p < 0.05$) shown in boldface.

4.5 Discussion

We explored settings for meeting sex partners and risk behaviours among 88 bisexual men living in Vientiane Capital, Laos. Bisexual men in Vientiane commonly reported multiple partners and multiple partner types in the past year. Men met sex partners in a variety of settings, and high risk behaviours – including inconsistent condom use, high partner turnover, and drinking before sex – were frequently reported in multiple settings. For instance, inconsistent condom use with male and female partners was over 70% for all settings; at least two-thirds of bisexual men meeting male and female partners in sex-on-premises type settings and females in other settings reported a high number of sex partners; and at least half of men reported frequently drinking before sex with kathoey partners, regardless of setting. Unlike most previous studies which focus on self-identifying gay and bisexual men [359, 360, 364, 365], our study was unique in focusing on behaviourally bisexual men, of which the majority were heterosexual-identifying.

The most common settings for bisexual men to meet their sex partners were hospitality settings and private residences, followed by sex-on-premises type settings. These are similar to settings reported in the U.S. [358, 360, 365], although the popularity of the internet (recorded in this analysis under 'other' settings) appears far less pronounced in Laos. As seen elsewhere, most men reported more than one category of setting for meeting partners. Of interest, heterosexual-identifying and bisexual/homosexual-identifying men differed in patterns for partner seeking; bisexual men who were heterosexual-identifying were more likely to meet male and female partners in hospitality settings, while those who were bisexual/heterosexual-identifying were more likely to meet these partners in private settings. This has potential implications for accessing men for health promotion initiatives.

Bisexual men meeting sex partners in hospitality settings in particular engaged in higher-risk behaviours than men not frequenting these settings for meeting sex partners. Firstly, meeting male and female sex partners in hospitality settings was associated with higher report of frequently drinking alcohol before sex, which is similar to a large national study in the U.S. that found associations between meeting partners in bars, clubs and parties and alcohol use prior to sex [360]. While this finding is not surprising given the availability and common focus on alcohol in such settings, it is concerning given numerous studies have linked consuming alcohol before sex to a higher incidence of HIV [347, 379, 380]. Although causal relations have not been established, there is potential for alcohol-associated disinhibition to increase riskier sex, and even without causality, alcohol may be an important marker for targeting high-risk men [379].

Meeting sex partners in hospitality-settings was also associated with a history of having a high number of female partners, and relatively higher number of kathoey partners, which is an important finding given multiple sexual partnerships increase the risk of transmission of HIV and other STIs [381]. In contrast, U.S. based studies have identified associations between meeting sex partners on the internet and through sex-on-premises venues and reporting a higher number of sex partners [359, 360, 369]. Although significant differences in inconsistent condom use were not detected across settings, there was a tendency for a higher proportion of men reporting meeting male and kathoey partners in

hospitality settings to report inconsistent condom use than men not meeting partners in such settings. This is contrary to qualitative input from this same study [348], which may be suggestive of differences in intention versus actual behaviour.

Based on our findings, hospitality settings would be useful locations for sexual health promotion and HIV prevention initiatives to target bisexual men, given their popularity and attendance by men who engage in high-risk behaviour. Furthermore, hospitality settings would in particular provide access to heterosexual-identifying bisexual men, who are traditionally harder to reach and engage. Heterosexually-identifying men may be less likely to access the drop-in-centres in Vientiane, which largely attract effeminate men and male-to-female transgender people [138]. Sex-on-premises type settings should also be considered given their relative popularity in this group of men, and potential links to higher risk behaviours. In particular, hotels and guesthouses in Vientiane are also a common location of sexual encounters, regardless of setting for meeting sex partners [4]. Delivering sexual health promotion in hospitality and sex-on-premises type settings can provide information and condoms in a timely fashion (provided just prior to sex being initiated) and with broad reach, with the ability to reach high numbers and diverse individuals at risk.

Internationally, bars, clubs, saunas, and sex-on-premises venues have been used to host a variety of HIV prevention initiatives targeting men who have sex with men [229, 234, 235, 373-378]. However, evaluated interventions of venue-based prevention initiatives largely originate from the U.S., and it is not clear how they will generalise to other settings and communities, particularly in places such as Laos where non-Western typologies of same-sex attraction and behaviour prevail [4, 48]. 'Gay' identity is a relatively new concept in Laos [4], and the majority of men who have sex with men and women identify as heterosexual. The lack of a cohesive community, formal networks, or large commercialised gay scene may inhibit the direct adaption of aforementioned interventions to the Lao context [372], and initiatives should rather target mainstream bars and clubs. The typology of sex-on-premises venues is also very different in Laos compared to other countries [136, 153, 175, 184], and initiatives should focus on hotels, guesthouses and bars rather than brothels *per se*. HIV programs in Laos commonly use peer educators, and thus foster informal networks of gay, bisexual, and other men who have sex with men [136]. Peer education programs in developing countries are shown to be moderately effective at improving behavioural outcomes such as HIV knowledge or condom use, but no significant impact on biological outcomes such as sexually transmitted infection (STI) incidence is evident [382]. Nonetheless, integrating peer education along with condom-distribution into hospitality-based interventions could help to circumvent the limitations of not having formal networks or a commercialised gay scene while still targeting and tailoring information for high-risk groups such as bisexual men.

While private residences were also popular settings for meetings sex partners, these settings pose access challenges and they would be difficult for health educators and organizations to regularly identify and access. An exception in Laos are dormitories, low-cost student accommodation, which may be conducive to a range of initiatives. Dormitories only accounted for a minority of the responses for meeting sex partners in private residences in this sample, but were the most commonly reported

living arrangement by bisexual men. Subsequently, they may still be an important setting to reach bisexual men for HIV prevention and outreach.

Based on our findings, possible interventions to reduce HIV and STI risk include the provision of free or low-cost condoms and lubricant to patrons of hospitality venues, including bars, beer-shops, and nightclubs, as well as hotel, guesthouses, and saunas. The Center for HIV/AIDS/STI (CHAS) and Population Services International (PSI) Laos have previously initiated the distribution of condoms through entertainment and hospitality venues, guesthouses and hotels, but evaluations suggest that the impact of these programs would improve with expanded coverage and higher visibility and promotion within venues [3, 136, 183, 184]. Further research may be necessary to determine the optimal placement of condoms for clientele and hospitality management alike to ensure that condoms are visible or well promoted but can be purchased discretely. Secondly, education and awareness campaigns could be integrated into hospitality settings to increase sexual health knowledge and awareness, promote demand for condoms and encourage HIV and STI testing. While these interventions may not specifically target bisexual men, our research suggests that they would be able to reach large numbers of high-risk men. Further research should: explore the acceptability of such initiatives among bisexual men, hospitality and guesthouse owners and staff, and the general public in Vientiane [383]; ascertain whether particular venues should be targeted to reach maximal numbers of high-risk men and their sexual partners; and determine whether education materials need to be tailored to specific sub-groups.

An increasingly popular strategy for sexual health promotion is using online technologies and social media. This has been used in numerous international settings with applications such as education [224, 384-386], personalized information and counselling [387], partner notification services [388, 389], promotion of sexual health checks [388, 390], outreach [389], and online testing [221]. While most published studies and evaluations are based in the U.S., Australia, and Europe, there is increasing interest in internet-delivered interventions in Asia [391], and a number of studies are emerging [392, 393]. Potential advantages and benefits include high coverage, low cost, ability to tailor interventions to personal needs and preferences, and adaptability to local contexts and population [394]. While we found that the use of the internet and phones (grouped under “other” settings) was relatively low in this group in 2010, the penetration of the internet and 3G smart phones in Laos is increasing [126, 227], and key health partners should be preparing for these changes.

This study has a number of limitations. The sample size is small and therefore given the limited study power, analyses are constrained in that they may detect only strong associations between risk behaviour and setting. Further, cell sizes in some analyses are small and this should be noted when interpreting estimates. The sample was achieved using a non-probability sampling method, and therefore caution should be exercised when inferring study results to bisexual men in Vientiane. In particular, this sample of bisexual men is young, relatively well educated, and only a few men had ever been married. Results may not be representative of older bisexual men who have married but continue to have sex with men and/or kathoey or less educated bisexual men. Despite this, this sampling strategy was crucial in recruiting an otherwise largely hidden and difficult to reach group of men with high-risk behaviour. Multivariable analyses showing the independent effects of each setting were not

possible due to evidence of model over-fit and instability in estimates given the relatively small sample size. Further, the required grouping of setting locations and partner types may have obscured differences in risk by setting. Participants were asked where they usually met sex partners, and we did not collect data pertaining to where the sexual encounters occurred; qualitative findings have reported that sex does not always happen immediately, particularly within hospitality settings [348], and thus other factors particular to the setting of sexual encounter may further influence condom use.

In conclusion, we found that bisexual men in Vientiane, Laos most commonly meet sex partners in hospitality settings and private residences. Inconsistent condom use was high across partners and genders, highlighting concern for HIV and STI transmission for bisexually active men. Hospitality settings and sex-on-premises type venues in particular may provide valuable opportunities for education and health promotion given they provide access to bisexual men with high-risk behaviours, may improve engagement of heterosexual-identifying bisexual men, and promote awareness and preparedness before sex is initiated.

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Chapter Five

5 . Buying and selling sex among bisexual men in Laos

Transactional sex is the exchange of money, goods or favours in return for sex. While it includes sex work, it also encompasses less formal exchanges and people who transact sex may not identify as sex workers. In Laos, FSWs and MSM are both priority populations for HIV prevention, but there has been little work examining the overlapping risk behaviours of transactional sex and male-to-male sex.

Globally, men who sell sex usually sell sex to men but may also sell sex to women or have non-paying female partners. In Laos, prior studies have reported that is relatively common for MSM to receive and pay money for sex. Men who sell sex often report having female, male and transgender clients, and bisexual behaviour is relatively common. However, there is no detailed data exploring the gender of transactional sex partners and associated risk for HIV and STIs.

Using data from the 2010 sexual networking study, Chapter 5 explores transactional sex among behaviourally bisexual men in Laos by considering the gender of transactional partners, direction of payment, and implications for risk and HIV prevention in Laos. This paper highlights the complexity of transactional sex arrangements among behaviourally bisexual men, with implications for how messages around risk and prevention should be framed and targeted to this population.

Chapter 5 represents the following published paper:

> Bowring AL, van Gemert C, Vongsaiya K, Hughes C, Sihavong A, Chanliivong N, et al. It goes both ways: a cross-sectional study of buying and selling sex among behaviourally bisexual men in Vientiane, Laos. *Sex Health*. 2015;12(5):405-10.

Declaration for Thesis Chapter Five

MONASH UNIVERSITY
Declaration by candidate

In the case of Chapter 5, the nature and extent of my contribution to the work was the following:

Nature of contribution	**Extent of contribution (%)**
Data analysis, results interpretation, manuscript preparation and review	65%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	**Nature of contribution**	**Extent of contribution (%)***
Caroline Van Gemert	Study design, study coordination, manuscript review	10%
Kongchay Vongsaiya	Study coordination, study collection, manuscript review	N/A
Chad Hughes	Study design, manuscript review	N/A
Amphoy Sihavong	Local technical oversight, manuscript review	N/A
Chansy Phimphachanh	Local technical oversight, manuscript review	N/A
Niramonh Chanlivong	Study coordination, manuscript review	N/A
Mike Toole	Study design, manuscript review	N/A
Margaret Hellard	Study design, manuscript review	N/A

* For student co-authors only

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work.

Candidate's Signature [redacted] **Date** 11/9/2015

Main Supervisor's Signature [redacted] **Date** 11/9/2015

It goes both ways: a cross-sectional study of buying and selling sex among young behaviourally bisexual men in Vientiane, Laos

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5.1 Abstract

Background: Transactional sex may increase risk of HIV and STIs. In Laos men who have sex with men are disproportionately affected by HIV and bisexual behaviour among men is relatively common. We explore the occurrence of transactional sex among behaviourally bisexual men in Vientiane, Laos.

Methods: In 2010, behaviourally bisexual men were recruited through enhanced snowball sampling to complete a behavioural survey. We describe reports of transactional sex partners (anal/vaginal sex) in the previous year by direction of payment and partner gender.

Results: Of 88 participating behaviourally bisexual men (median age 22 years), 17 (19%) reported only selling sex, eight (9%) reported only paying for sex, and nine (10%) reported both selling and paying for sex. Men reporting any transactional sex reported a median of four transactional sex partners and reported a higher number of total sex partners in the previous 12 months (median: 18.5) than men reporting no transactional sex partners (median: 6).

Of 26 men reporting selling sex, 15 (58%) were paid by female, 15 (58%) were paid by male, and 14 (55%) were paid by transgender sex partner(s); 11 (42%) reported consistent condom use (CCU) when selling sex.

Of 17 men reporting paying for sex, 13 (76%) paid female, six (35%) paid male and two (12%) paid transgender partner(s); eight (47%) reported CCU when paying for sex.

Conclusions: Young behaviourally bisexual men engaging in transactional sex may be at increased risk of HIV and STIs. Prevention interventions should consider the transient and informal nature of transactional sex in this population.

5.2 Introduction

In the Lao People's Democratic Republic (herein referred to as Laos) transactional sex is usually considered in the context of female sex workers [6]. While female sex workers are more often the focus of international reports and research, worldwide men sell sex in a variety of contexts [395], and Laos is no exception. Transactional sex encompasses the exchange of sex for money, goods, and favours and considers people who may not identify as sex workers [9]. In a 2007 study of men who have sex with men in Vientiane, Laos, 22% had recently received money for sex, and 28% had recently paid for sex [48]. Qualitative research also supports that exchange of money or other goods is relatively common in male-to-male relationships in Laos, particularly with paying younger males [4]. Globally, there is concern that engaging in transactional sex may increase men's risk of HIV [9]. In Laos, men who have sex with men are disproportionately affected by HIV (prevalence 5.6% in 2007 compared to 0.2% in the general population), and there is limited evidence that male-to-female transgenders and men who have sex with men who have sold sex may have higher HIV prevalence than their peers who do not sell sex [48, 170].

Worldwide, a substantial proportion of men who transact sex identify as bisexual or heterosexual, and may sell sex to men and/or women [9]. Bisexual behaviour among men in Vientiane is relatively common [48, 175], and young men who sell sex often report having both female and male clients [175]. However, there are no detailed data exploring the gender of transactional sex partners among bisexual men in Laos. In 2010, we conducted a study of behaviourally bisexual men and their sexual partners in Vientiane, Laos to assess the potential risk for HIV transmission through these networks. Previously reported results showed that behaviourally bisexual men commonly reported transactional sex; 30% reported being paid for sex and 19% reported paying for sex [318]. Other high risk behaviours, including low rates of consistent condom use and multiple sexual partners, were also widespread.[318] In this paper, we expand on these results and further explore the occurrence of transactional sex among behaviourally bisexual men in Vientiane by considering gender, direction of payment and implications for risk and HIV prevention in Laos.

5.3 Methods

Recruitment methods have been described previously [318, 343]. In brief, a retrospective cross-sectional behavioural survey was conducted in Vientiane, Laos between June and October 2010. Behaviourally bisexual men and their sexual partners were recruited through enhanced snowball sampling, starting with ten behaviourally bisexual male recruits ("seeds"), and continuing for two to three waves of recruitment. Each participant could refer up to five of their past year sexual partners. Participants were required to be aged 18 years and older and to have engaged in anal, vaginal or oral sex in the previous 12 months. Prior to recruitment a mapping exercise was used to identify locations where bisexual men socialized in Vientiane. In order to broaden representativeness of the final sample, seeds were purposively selected from different sites and intentionally included seeds with diverse attributes, such as sexual identity, education, and number of sex partners.

This analysis is limited to male participants who reported anal or vaginal sex with male and/or kathoey and female sex partners in their lifetime (behaviourally bisexual men). For the purpose of brevity, herein they will be referred to as bisexual men. Kathoey is short for *kathoey phom yao* or *kathoey teng ying* and is the common term in Laos and Thailand for male-to-female transgenders, who are birth-assigned males but self-identify as female (or non-male), and may appear and act as female or male [176].

Data were analysed using Stata (Version 11, Stata Corp., College Station, Texas, USA). Transactional sex was defined as anal or vaginal sex with paid or paying partners during the previous 12 months. For each gender and transaction type, participants self-reported number of sex partners and condom use in the previous 12 months. We describe the proportion of bisexual men who report no transactional sex partners, only paying for sex (participant gave money, gifts or favours to at least one person in return for sex), only selling sex (participant received money, gifts or favours from at least one person in return for sex), and both paying for and selling sex in the previous 12 months. In each of these categories, we report on the median number of transactional sex partners and total number of sex partners in the previous 12 months. Number of transactional sex partners as a proportion of total number of sex partners was calculated individually, and the median proportion is reported. Median number of total sex partners was compared between those reporting any and no transactional sex partners using a Mann-Whitney Test to significance level $p < 0.05$.

Among bisexual men paying for sex and selling sex, we respectively describe the proportion reporting male, female and kathoey transactional partners and consistent condom use (CCU) when paying for or selling sex with respective partners. CCU was defined as always using a condom during anal and vaginal sex in the previous 12 months.

Ethical approval was obtained from the ethical review committees of the Alfred Hospital and Australian National University, Australia; and the University of Health Sciences, and the National Ethics Committee for Health Research, Laos.

5.4 Results

Overall, 342 sexual partners were nominated through snowball sampling, and 298 (87%) individuals participated in the behavioural survey, of which 189 were male. Eight males were excluded due to incomplete data on gender of lifetime sex partners. The remainder of the analysis is based on 88 (49%) males who reported anal/vaginal sex with women and men and/or kathoey in their lifetime (i.e. behaviourally bisexual). The median age of bisexual men was 22 years (inter-quartile range [IQR] 20-24). The majority (75%) reported any higher education, and 63% were currently studying (Table 16). Half of men were currently employed, and the most common settings of employment were in an office (47%) or bar/nightclub (18%). Two men reported working in a massage parlour or sauna. Four men had ever been married (three currently married), and all of these men reported having children. Men most commonly reported living in a dormitory or share room (42%) or with parents (34%).

Table 16 Demographic characteristics of participating bisexual men

	Bisexual men	
	n	%
Total number of participants	88	100
Age group (years)		
18-19	14	16
20-24	56	64
25-29	14	16
30-32	4	5
Currently studying	55	63
Completed higher education[a]	66	75
Currently employed	45	51
Office	21	47
Bar/nightclub/beer shop	8	18
Restaurant	4	9
Home	4	9
Massage parlour/sauna	2	4
Shop	2	4
School/university	2	4
Hotel	1	2
Construction site	1	2
Ever been married	4	5
Originally from Vientiane	39	44
Living arrangement		
Share room or dormitory	37	42
Live with parents	30	34
Live with relative/s	13	15
Live with partner	3	3
Live alone	2	2
Other	3	3

[a] Higher education defined as any education beyond upper-secondary school

Of the 88 bisexual men, 17 (19%) reported only selling sex (median of five transactional sex partners), eight (9%) reported only paying for sex (median: 4), and nine (10%) reported both selling and paying for sex (median: 6.5) in the previous 12 months (Table 17). Fifty-four (61%) bisexual men reported no transactional sex partner, including two men reporting only transacting oral sex.

Twenty-two out of 34 men reporting any transactional sex had complete data on number of sex partners. Based on these men, men reporting any transactional sex reported a higher number of total sex partners in the previous 12 months (median: 18.5) than men reporting no transactional sex partners (median: six; $p = 0.01$) (Table 17). Among men reporting any transactional sex, transactional sex partners accounted for a median of 29% of all sex partners.

Table 17 Transactional sex encounters in the previous 12 months among behaviourally bisexual men (n=88)

			Number of transactional sex partners	Total number of sex partners[d]
	n	%	median (IQR)	median (IQR)
No transactional sex partner	54	61	NA	6 (4–10)
Only sold sex[a]	17	19	5 (3–9)	24 (4–44)
Only paid for sex[b]	8	9	4 (1–5)	14 (5–20)
Paid and sold sex	9	10	6.5 (3–13)	16 (10.5–56.5)
Any transactional sex[c]	34	39	4 (3–10)	18.5 (5–44)

[a] Participant received money, gifts or favours for sex from at least one person in the previous 12 months.

[b] Participant gave money, gifts or favours to at least one person in the previous 12 months in exchange for sex.

[c] Participant exchanged money, gifts or favours for sex with at least one person in the previous 12 months, either selling sex or paying for sex.

[d] Anal and/or vaginal sex partners in the previous 12 months.

IQR, inter-quartile range

Of the 26 bisexual men reporting ever selling sex in the previous 12 months, men reported selling sex to female (58%), male (58%), and kathoey (55%) sex partners. Overall, 11 (42%) bisexual men reported CCU when selling sex, ranging from 27% CCU when selling sex to female partners to 60% CCU when selling sex to male partners (Table 18).

Of the 17 bisexual men reporting ever paying for sex in the previous 12 months, men reported paying for sex from female (76%), male (25%), and kathoey (12%) sex partners. Overall, eight (47%) bisexual men reported CCU when paying for sex, and this was similar when paying female (46%), male (50%) and kathoey (50%) partners (Table 18).

There was considerable overlap in bisexual men reporting male, female and kathoey sex partners. Among 34 bisexual men reporting any transactional sex partner, three (9%) reported male and kathoey transactional sex partners, five (15%) reported female and kathoey, four (12%) reported female and male, and six (18%) reported female, male and kathoey transactional sex partners.

5.5 Discussion

In this study of young behaviourally bisexual men in Vientiane, we found that it is relatively common for bisexual men to transact sex, but the gender and direction of payment vary and frequently overlap. Our results suggest that young bisexual men who transact sex may be at higher risk of HIV and STIs than those who do not transact sex. However, sexual transactions may not be the main source of the elevated risk; multiple sex partners and condomless sex with non-transactional sex partners may be more important.

Table 18 Proportion selling and paying for sex from female, male and kathoey sex partners, and consistent condom use when selling and paying for sex.

	Ever sold sex[a]		CCU[b] when sold sex		Ever paid for sex[c]		CCU[b] when paid for sex	
	n	%	*n*	%	*n*	%	*n*	%
Total	26	30	11	42	17	19	8	47
Female	15	58	4[d]	27	13	76	6	46
Male	15	58	9	60	6	35	3[d]	50
Kathoey	14	54	6	43	2[d]	12	1[d]	50

[a] Participant received money, gifts or favours for sex from at least one person in the previous 12 months.

[b] CCU: Consistent condom use, reports always using a condom during anal and vaginal sex in the previous 12 months.

[c] Participant gave money, gifts or favours to at least one person in the previous 12 months in exchange for sex.

[d] Note, small cell sizes (n<5) should be interpreted with caution.

Thirty-nine per cent of bisexual men reported any transactional sex partner in the previous year, of which one-quarter reported both buying and selling sex, and over one half reported more than one gender of transactional sex partners. Previous studies have reported that men selling sex in Laos are driven by financial reasons [175], but this does not fully explain the combination of both buying and selling sex seen in some men. While other studies have focused on men selling sex to kathoey [4] and buying sex from women [175], we found that a similar proportion of bisexual men sold sex to male, female and kathoey partners, and as well as paying female partners, one third of bisexual men who bought sex paid male partners. Further qualitative research is needed to elucidate how partner gender affects the motivations, perception and negotiation of transactional sex.

That nearly 30% of all sex partners were transactional demands a more nuanced view of transactional sex in this population. It is relatively small proportion to what one may expect from commercial sex workers, and suggests that bisexual men transacted sex informally and occasionally rather than as a sole source of income. In support of this, most men did not work in traditional settings associated with direct sex work [396]. Only three men reported working at a massage parlour, sauna or hotel where direct sex work may occur in Laos [397]. A number of men worked in bars, clubs or beer shops, which may be associated with sex work [6], but given the relatively low number of transactional sex partners in the past year (median of four), it is unlikely that these men were working for the sole purpose of selling sex. Nonetheless, in the context of men who likely do not identify as sex workers, transactional sex still accounted for a considerable proportion of sex partners. Further, transactional sex existed within complex networks also involving regular and casual partners, all of which may be contributing to risk of HIV and STIs in this group. Subsequently, a dyadic model of risk and intervention involving sex workers and their clients, common in dialogue on female sex workers, is unlikely to adequately address HIV risk and transmission in this context.

Even though the number of transactional sex partners was relatively low, bisexual men reporting transactional sex partners had a substantially higher number of sex partners overall compared to bisexual men not engaging in transactional sex. This has also been reported in other settings among men who sell sex [398, 399]. High numbers of partners may be indicative of concurrent relationships

or frequent partner turnover, both of which increase risk of HIV and STI transmission [400-402]. Less than half of men reported CCU with transactional sex partners whom they sold sex to or bought sex from. This was similar for all partner genders, although trending towards lower CCU when selling sex to female partners. In comparison, bisexual men from the same study reported 7% CCU with regular partners and 35% with casual partners [318]. Thus, while CCU was relatively higher with transactional sex partners, it still poses high-risk of disease transmission, particularly when in conjunction with numerous sex partners. Further research is needed to understand whether transactional sex was negotiated as one-off or recurring engagements and how this may influence condom use and risk.

These results emphasise the importance of including bisexual men in conversations and initiatives around transactional sex in Laos. Currently transactional sex in Laos predominantly considers service women or female sex workers, who have relatively lower HIV prevalence (0.7%) than men who have sex with men (5.6%) [48, 164], and who reported higher CCU when selling sex (70%) [164]. Our study shows that transactional sex is relatively common among bisexual men and coincides with other high-risk behaviours such as multiple sex partners. However it is difficult to draw absolute conclusions about increased HIV and STI risk because there is limited biological data for bisexual men in Laos. The aforementioned study reported similar HIV prevalence between behaviourally bisexual (6.1%) and homosexual (5.2%) men, while disaggregated data on STI prevalence is not known [48]. However, the sexual networks of bisexual men include men who have sex with men, female sex workers and kathoey [343], who each have moderate to very high prevalence of chlamydia and gonorrhoea [164, 165]. Other settings have demonstrated that bisexual men have lower engagement in HIV prevention programs than other men who have sex with men and are less likely to access HIV testing [82, 83, 403], thus increasing risk of undiagnosed infection. In Laos, programs for men who have sex with men largely cater to kathoey and effeminate men [3, 136], and bisexual men who identify as straight may not feel comfortable in these settings nor be adequately engaged in these programs [4].

Inclusion of bisexual men in HIV prevention and sexual health programs should be done by focusing on risk behaviours rather than risk-groups, in order to facilitate more comprehensive coverage of relevant messages and account for overlapping risk behaviours in a manner not dependent on identity—whether it be sexual identity or identity as a sex worker [34]. Previous work from this study has shown that bars, night clubs and beer shops are the most common settings for young bisexual men to meet sex partners, and that these venues may be particularly useful to reach men with high-risk behaviour and heterosexual-identifying bisexual men [397]. Key points of intervention should include promotion of consistent condom use with all sexual partners, frequent voluntary HIV testing and counselling, routine STI screening and treatment, and early initiation of antiretroviral therapy (ART) [5, 24]. In addition to education and counselling, structural interventions are needed to support the availability of affordable condoms and lubricant, clear guidelines for asymptomatic STI testing and the strategic use of ART, and improved access to comprehensive sexual health services.

This study has a number of limitations. First, the sample size limits the study power to detect differences in number of sex partners by different levels of engagement in transactional sex, and small cell sizes in some analyses should be noted when interpreting estimates. Second, the sample was recruited using a non-probability sampling method, and caution should be exercised when inferring

study results to the broader population of bisexual men in Vientiane. There are no robust estimates of the size or profile of the bisexual male population in Laos in order to assess the representativeness of this sample [156]; however, this sample of bisexual men is young, relatively well educated, and only a few men had ever been married, and thus results may not be representative of older bisexual men who have married but continue to have sex with men and/or kathoey or less educated bisexual men. Nonetheless, using restricted snowball sampling helped to limit the influence of seeds on the final sample composition and helped to recruit a relatively diverse group of bisexual men who are difficult to capture through probability-based sampling methods [404]. Third, a long recall period of 12 months was used to assess number of partners and CCU and may have increased recall bias.

5.6 Conclusions

In conclusion, we found that a substantial proportion of young behaviourally bisexual men in Vientiane transact sex, but they may do so irregularly and occasionally. Both paying for and selling sex was common, as was reporting transactional partners of multiple genders, thus alluding to complex and varied motivations for transactional sex in this setting. High numbers of overall sex partners among those who transact sex, as well as low CCU, suggest that these men are at increased risk of HIV and STI transmission. Prevention initiatives targeting bisexual men in Laos should incorporate education and health promotion related to transactional sex.

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Chapter Six

6 . Experience of transactional sex among bisexual men in Laos

The findings from the sexual networking study described in Chapter 5 demonstrated that behaviourally bisexual men commonly transact sex, and this may involve both selling and buying sex and a combination of kathoey, male and female partners. While other studies in Asia report on bisexual behaviour among men who sell sex, they focus on men with intimate, non-paid female partners or men who buy sex from FSWs. There is limited literature available exploring women who buy sex from men in Asia.

Chapter 6 builds on prior quantitative findings by exploring the motivations, perceptions, and experiences of transactional sex in behaviourally bisexual men in Laos; it is the first of two chapters based off the qualitative follow-up study, which used qualitative enquiry to explore the socio-cultural and individual influences on risk behaviour and health among behaviourally bisexual men in Vientiane. The qualitative study was informed by focus group discussions (FGDs) and in-depth interviews with behaviourally bisexual men, FGDs women from the general population, and interviews with key experts working in health, community, and government (Appendix D). The main target population was behaviourally bisexual men, who were recruited from entertainment venues, dormitories and through personal networks. This chapter focuses on bisexual men but also integrates findings from the women's focus groups in order to develop the broader sociocultural context of bisexual men's behaviour.

This chapter portrays a more nuanced view of the complexities of transactional sex in this population with consideration for the associated risks and relevant responses required. Findings demonstrate the normalisation of transactional sex among bisexual men in Laos and the central role of material exchange to bisexual men's sexual relationships. The fluidity of transactional sex in this population and the implications for condom use and sexual risk are discussed.

This chapter represents the following paper accepted for publication:

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Declaration for Thesis Chapter Six

MONASH UNIVERSITY
Declaration by candidate

In the case of Chapter 6, the nature and extent of my contribution to the work was the following:

Nature of contribution	**Extent of contribution (%)**
Study design, project management, data collection, data analysis, interpretation of results, manuscript preparation and review	75%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	**Nature of contribution**	**Extent of contribution (%)***
Nakhornphet Pasomsouk	Data collection, translation, manuscript review	N/A
Chad Hughes	Interpretation of results, manuscript review	N/A
Caroline van Gemert	Interpretation of results, manuscript review	5%
Peter Higgs	Data analysis, interpretation of results, manuscript review	N/A
Vanphanom Sychareun	Local technical oversight, manuscript review	N/A
Margaret Hellard	Study design, technical oversight, manuscript review	N/A
Robert Power	Study design, technical oversight, manuscript review	N/A

* For student co-authors only

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work.

Candidate's Signature [redacted] **Date** 11/9/2015

Main Supervisor's Signature [redacted] **Date** 11/9/2015

'We might get some free beers': Experience and motivation for transactional sex among behaviourally bisexual men in Vientiane, Laos

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6.1 Abstract

People engaging in transactional sex are considered a key population for HIV prevention. Prior quantitative surveys demonstrated that behaviourally bisexual men in Vientiane, Laos commonly transact sex. In 2013, we conducted a qualitative study to explore behaviourally bisexual men's experience, motivations and perceptions related to transactional sex in Vientiane. Behaviourally bisexual men were recruited from bars, nightclubs and dormitories for five focus group discussions (FGDs) and eleven in-depth interviews (n=31). Additionally, young women were recruited from a university, garment factory, and nightclub for four FGDs (n=22). Transcripts were translated and thematically coded. Bisexual male participants most commonly described being paid for sex by male-to-female transgender people and buying sex from women. Both male and female participants reported that older, single women pay younger men for sex. Negotiation and direction of sexual transactions are influenced by age, attraction and wealth. Common motivations for selling sex included the need for money to support family or fund school fees, material gain or physical pleasure. Transactional sex was often opportunistic. Some behaviourally bisexual men reported selling sex in order to pay another more desirable sex partner or to buy gifts for their regular sex partner. Participants perceived high risk associated with intercourse with female sex workers but not with other transactional sex partners. Health interventions are needed to improve knowledge, risk perception and health behaviours, but must recognise the diversity of transactional sex in Vientiane. Both physical and virtual settings may be appropriate for reaching behaviourally bisexual men and their partners.

6.2 Introduction

In Vientiane, the capital of the Lao People's Democratic Republic (herein referred to as Laos), the prevalence of HIV is estimated at 5.6% (2007) among men who have sex with men (MSM) and 1% (2011) among female sex workers (FSWs) [48, 158, 163], both of which are considerably higher than

the general population (estimated at 0.3% in 2013) [158]. Whilst commercial sex and male-to-male sex are central to the HIV response [15, 156], there is less consideration given to the overlap in these behaviours – that is, the buying and selling of sex among MSM. Globally it is shown that MSM who also transact sex are disproportionately affected by HIV compared to those who do not [9, 395], and people engaging in transactional sex are considered a key population for HIV prevention [5, 13, 405].

Transactional sex entails the exchange of money, goods and favours for sex and is inclusive of people who do not identify as sex worker or only transact sex occasionally [9]. Literature typically focuses on men buying sex from women or men selling sex to men, but sexual transactions may involve men, women, or transgender people [9, 406]. Although exchanging money or goods for sex is not inherently more risky than non-paid sex, engaging in transactional sex may increase risk of HIV transmission due to high partner turnover, concurrent partners and variable condom use, which may be moderated by power disparities, substance use and coinciding psychosocial problems [9, 395, 407-409]. These factors are often compounded by the criminalisation and stigmatisation of transactional sex, which may impair access to a safe environment, condoms, and sexual healthcare [395, 410].

Many MSM in Asia engage in transactional sex [27, 47, 399, 411-413], and Laos is no exception [4, 48, 175, 318]. Bisexual behaviour is relatively common among MSM in Laos, and these men may transact sex with more than one gender [48, 175, 343]. A survey of bisexual men and their sexual partners in Vientiane (2010) found that 39% of behaviourally bisexual men reported any transactional sex, and 10% reported both selling and buying sex [414]. Bisexual men sold sex to female, male and transgender partners, and while they were most likely to pay females for sex, one third also paid male partners [414]. Behaviourally bisexual men who transacted sex reported risky behaviours for sexually transmitted infections (STIs), such as a high number of sex partners and inconsistent condom use [414]. Detailed qualitative explorations of transactional sex among men who have sex with men in Laos are limited to grey-literature. In 2006–2007, a large qualitative study was conducted with 93 MSM and *kathoey* (male-to-female transgender people) around sex and sexuality [4]. Discourse around transactional sex was focused on kathoey paying younger men for sex, but stipulated that kathoey are sometimes paid by older, married men for sex, and gay men also pay younger men for sex [4]. However, there was little consideration given to the gendered nuances of transactional sex, particularly the involvement of female partners. While other studies based in Asia report that men selling sex also report female partners [47, 399, 415], to our knowledge there are no published studies from the region exploring the occurrence of MSM receiving money from women for sex, as previously reported from Laos [175, 414].

In this study, we address the lack of published literature in Laos and seek to explore the fluidity of both buying and selling sex among behaviourally bisexual men and the role of gender. We complement previous quantitative studies and update prior qualitative reports with a more detailed exploration of behaviourally bisexual men's experience and perceptions of transactional sex in Vientiane, Laos, including the motivations for transactional sex, dynamics of exchange, currency of sex transactions, and how transactional sex is negotiated. With these data, we consider the implications of transactional sex among behaviourally bisexual men on HIV and STI risk and prevention initiatives.

6.3 Methods

6.3.1 Study overview

The data from this paper is drawn from a qualitative study of behaviourally bisexual men (herein referred to as bisexual) in Vientiane, the capital of Laos, carried out between May 2013 and April 2014.

The methodology has previously been described in detail [416]. Focus group discussions (FGDs) and qualitative in-depth interviews were held with bisexual men to explore influences on sexual behaviour, risk and health among this population in Vientiane, Laos. In addition, FGDs were conducted with young women from the general population in order to explore awareness of bisexual behaviour in some men, perception of social norms, and experience and attitudes around sex and relationships in Laos. This information helps to describe the sociocultural context of bisexual men's behaviour in Laos.

6.3.2 Recruitment

Bisexual men were recruited from bars, clubs, dormitories, a sauna and peer referral in Vientiane through a combination of purposive and convenience sampling. Participants were required to be aged at least 18 years, currently residing in Vientiane Capital, and report bisexual behaviour in their lifetime (defined as reporting ever having anal or oral sex with men and/or male-to-female transgenders, and reporting ever having vaginal or anal sex with women).

Three peer recruiters used a variety of techniques to identify potential bisexual male participants, such as observing behaviour of patrons and making conversation. If they thought a man might be suitable for the study, then they introduced the study and invited him to participate. Potential participants were handed an invitation card with a short description of the purpose of the study, what was involved in participating, a contact number, and map of the where FGDs and interviews would be held. Peer recruiters assessed eligibility during recruitment and again during confirmation of the FGD/interview time. While deemed to be eligible by recruiters, at the time of interview two men reported non-bisexual behaviours. One man reported no sexual contact with women and another man reported no sexual contact with men or *kathoey* (male-to-female transgender people who identify as women but may dress and appear as men or women [2]), although he was dating and attracted to long-hair *kathoey* (kathoey who dress as women). These two interviews were retained as behavioural outliers as they provide useful insight into the complexity of attraction and trajectory of behaviour in some behaviourally bisexual men.

Following FGDs, participants were asked if they were willing to be recontacted to participate in future interviews. These participants were later invited to participate in an interview or confirmatory FGD, but because no identifying information was collected, these are viewed as separate responses.

Women were recruited from a nightclub (n=3), garment factory (n=8), and the Faculties of Education (n=6) and Business Management (n=5) at the University of Laos by two Lao-female researchers. Eligible women were aged 18 years or older and current residing in Vientiane Capital; there were no criteria regarding sexuality or sexual experience.

6.3.3 Procedures

A combination of FGDs and semi-structured interviews were used to collect qualitative data. FGDs and interviews with bisexual men were held in discrete phases so that preliminary analysis of FGDs could inform interview enquiry. FGDs were held first and were used to: provide insight on social norms; discern a range of perspectives, beliefs and experiences around sex, sexuality and healthcare seeking; and inform subsequent interviews [417, 418]. Transactional sex was purposely approached in FGD questioning. Interviews with bisexual men sought more detailed personal information on participants' sexual experiences and beliefs, including details pertaining to specific episodes of sexual relations and risk-taking. Interviewees were probed to discuss if and how money or other goods were exchanged at first and last sex with men, kathoey and women. A confirmatory FGD was held with bisexual men at the end of the data collection period to clarify findings and confirm researcher interpretation of findings with bisexual male participants. FGDs with women sought female perspectives on sex, sexuality and social norms.

A Lao-national male facilitated FGDs and interviews with bisexual men in Lao language, lasting 1–2 hours, at the Burnet Institute office. One of two Lao-national female facilitators led FGDs with women either at either the place of recruitment or the Burnet Institute. All FGDs and interviews were audio-recorded and a notetaker was present in FGDs.

Informed verbal consent was obtained from all participants. Prior to commencing the FGDs with bisexual men, a short questionnaire was administered obtaining information on age, education, living arrangements, and sexuality. Participants were asked to self-define their sexuality. In order to depersonalise sensitive data obtained from FGDs, participants were instructed that they did not have to speak about personal experience and responses could be based on what they know, think or have heard from other people. No identifying-information was collected and pseudonyms were created to present study findings.

All participants were reimbursed 50,000 kip (approximately US$6) for expenses incurred due to participation, provided with a number of brochures on sexual health, HIV and available health services, and given condoms and lubricant.

6.3.4 Analytical strategy

Data consisted of detailed notes from FGD and verbatim transcripts from interviews. These were translated into English by one of two Lao-native speakers who have previously worked in sexual health and sexual diversity and were thus familiar with the language and terminology used. Translated data were imported into QSR International's NVivo 10 qualitative data analysis software (2012) for management and analysis. Minor editing of the translations was performed in consultation with the bilingual facilitator to improve readability. Thematic analysis was used to generate a series of themes and sub-themes. Coding was undertaken by one researcher (AB). Open coding was first undertaken to assign labels to sections of data based on evident concepts and categories. As the analysis progressed the coding framework was refined and organised through an iterative process by considering the relationship between themes (axial coding). In this paper we present on a subset of themes related to

transactional sex, summarised in Table 19. In the results, themes correspond to sub-headings and sub-themes are highlighted in text.

Following, preliminary analysis, researcher interpretation and themes were validated by presenting findings to bisexual men through a confirmatory FGD and holding a workshop with key stakeholders, with opportunity for feedback. Bisexual men and key stakeholders endorsed the findings and no substantial changes to interpretation resulted from feedback provided.

Ethics committees of the Alfred Hospital and Monash University, Australia and the University of Health Sciences, Laos approved the study.

6.4 Results

6.4.1 *Participant description*

Overall, five FGD and 11 interviews were held with 35 male participants, who represented 31 individual men when accounting for repeat participants (i.e. those took part in a FGD and interview). Of these, 29 men could be classified as behaviourally bisexual. The views of all 31 men are reflected in the results (see methods section for further explanation). Three to seven bisexual men participated in each FGD. Four FGD were held with 22 women in total. FGDs with women were organised by recruitment venue, and three to eight women participated in each FGD.

Participating men ranged in age from 18 to 35 years (median 22 years). Participants described their sexual identity as 'man' (n=16), 'real man' (n=12; literal translation of *phu sai tae*) and gay (n=4); identity was unknown in three cases. In Laos, reporting identity as man or 'real man' is synonymous with saying 'straight'. Twenty-one men completed a short survey prior to FGDs. Half of participants had higher education, and the majority (71%) were currently studying.

Table 19 Themes and sub-themes relating to transactional sex[a]

Theme	Sub-theme
Influences on direction of payment	Gender Age
Motivation for transactional sex	Financial gain Support other partners Sexual desire Immediacy Attraction Partner was unavailable
Value of transactional sex	Price Cash alternatives
Temporal arrangement	Repeated Long-term Emotional development (emotional)
Settings for transactional sex	*haan sao bor li kaan*[b] Nightclubs Beer shops Massage parlours Mobile phone Guesthouse Alcohol
Negotiation of transactional sex	Self (themselves) Arrangement Power dynamics
Condom use and perception of risk	Female sex workers Condom use when being paid

[a] Themes respond to sub-headings in results section, and sub-themes are bolded in text. Where wording in text differs, the exact phrasing is indicated in brackets.

[b] Literally 'service women shop', whereby service women describes women working at beer shops, bars, and other entertainment establishments who may be solicited for sex

6.4.2 Influences on direction of payment

Overall approximately three-quarters of bisexual men discussed transactional sex during FGDs or interviews, including four men in interviews referring to personal examples of transacting sex. This was dominated by men who identified as straight, and only one man who identified as gay spoke about transactional sex. Transactional sex was reported with all **genders** but this differed by participant type. FGD participants most commonly described being paid for sex by kathoey or buying sex from females, interview participants referred to being paid for sex by kathoey or gay men, and only one interviewee discussed buying sex from female sex workers. Many FGD participants also spoke about being paid for sex by women or men, and one man referred to buying sex from kathoey. No participants spoke about buying sex from men. Participants often used terms such as "these days", implying that transactional sex has become more common.

> Facilitator: How do partners that you pay for sex differ from partners that pay you for sex?

> Participant: Mostly men give to women but we will receive [money, gifts] from older women or kathoey, because kathoey like to find boys to sleep with them. This is what society is like these days. (Meo, men's FGD#4, aged 20)

Bisexual men described women who they bought sex from as FSWs, service women, women, and the opposite sex. In Laos, the term service women is used to describe women working at beer shops, bars, and other entertainment establishments where men may seek women for transactional sex, and is often used interchangeably with FSW [6]. Many female respondents also described men buying sex from FSWs and young women selling sex to older males when they need money.

Both bisexual male and female participants described that women who pay men for sex are older single women, widows and divorced women who frequent pubs or nightclubs to look for sex partners and buy sex from men.

> My older sister [honorific term indicating social respect], she is a divorced woman. She used to go to What Club [nightclub], and she asked me if I wanted a younger boy to sleep with, because there are these types of guys at the club [men who come to sell sex]. (Chanmaly, Women's FGD, nightclub)

Most female participants thought that above the age of either 30 or 35, single women would be considered 'old' and would be stigmatised for not marrying. In contrast, a few participants saw this as a positive sign of financial and emotional independence from men and familial obligations.

The extent to which men engaged in transactional sex differed. Some participants described sex with men or kathoey as usually being transactional and sex with women as usually being non-transactional.

> Interviewer: When you had sex with women who was not your [primary] partner, did they give you any money?
>
> Participant: No, it was just for fun. But I get something if I have sex with gay men or kathoey. (Kai, interviewee, aged 25)

In contrast, others explained that money or other goods were not part of their sexual relationships with men and kathoey. One man said he would pay for sex, but was never paid for sex.

Interviewees only described selling sex, but in FGDs many men referred to men both buying and selling sex. While some men portrayed buying and selling sex as separate entities, others depicted the fluidity between buying and selling sex. These contrasting viewpoints are illustrated in the following two quotes:

> People who we pay and who pay us are very different. Who we pay are the opposite sex and those who pay us are the same sex. For instance, kathoey. (Keomany, men's FGD#2, aged 25)

> Buying or being paid happen when we want to have sex but our partner is not able to give it to us, so we have to go to someone else. It is possible that we pay them or they pay us. (Persuth, men's FGD#2, aged 23)

Age was said to influence the direction of payment, and some men saw age disparity as a prerequisite for transactional sex. Bisexual men reported being more likely to buy sex from younger women and be paid for sex by older women or kathoey, such that it is usually the younger person who receives payment:

> Mostly older women like to pay for younger boys, older men like to pay for younger women, and kathoey like to pay for men. (Deng, men's FGD#2, aged 21)

6.4.3 Motivation for transactional sex

There were multiple and interconnected motivations for transacting sex, with overlap in the reasons for buying sex and selling sex, as well as transactional and casual sex. These were influenced by opportunity and valuation of a potential partner's physical and financial assets.

The most common motivation for selling sex was **financial gain**. Some men reported selling sex out of necessity to fund school fees or support a sick family member.

> Sometimes [we sell sex] when we face money problems. Mainly this is school fees, which our parents cannot send on time. (Moo, men's FGD#1, aged 24)

Other men used transactional sex to pay for general expenses, bills or desirable goods. Transactional sex relieved financial pressures and provided spending money or gifts for leisure and social activities.

> I sometimes go out to look for kathoey when I run out of money. (Pet, interviewee, age missing)

Some men referred to selling sex in order to earn money to buy gifts for their regular partner, and specifically their girlfriend.

> A man who has a girlfriend also has sex for money so that he can buy gifts for his girlfriend. (Deng, men's FGD#2, aged 21)

Finally, a few participants spoke about men or kathoey selling sex in order to pay for another more desirable sex partner.

> Kathoey can find such things which they give to us because there are other people who give it to them as well. (Phone, men's FGD#2, aged 23)

Sexual desire was the main reason given for buying sex, but sometimes also led to selling sex. For example, some men reported seeking sex from men or kathoey for both "*money and love*". One participant expressed that it did not matter whether you were paid or paid someone else; both lead to sex and sexual satisfaction.

> The feeling you have when paying or getting paid for sex is slightly different but eventually we get the same happiness. (Noy, men's FGD#3, aged 21)

Although not unanimous, many men relayed that sex with men and kathoey is generally more pleasurable than with women, or that men and kathoey partners are more attentive to both their physical and emotional needs. Participants generally referred to both anal and oral sex with kathoey or male sex partners and usually referred to only vaginal sex with women. Most participants were not comfortable receiving oral sex from women or thought that women do not like to give oral sex, and thus the opportunity for oral sex may have contributed to motivation for transactional sex with men or kathoey.

Many women supported this, claiming that women cannot give men oral sex, particularly between '*people who have true love*' opposed to in casual or paid relationships. Numerous women described that men will have sex with kathoey so that they can have oral sex, because kathoey are '*insatiable*', and because kathoey will give men money.

> When men go to kathoey, they [kathoey] will make them feel good and have fun. My friend has sex with kathoey. Kathoey did everything for him: gave him oral sex, seduced him, and gave him money. So that's why men like kathoey. (Vathsana, women's FGD, education faculty)

However, a number of women disagreed and thought that oral sex is popular between men and women.

Bisexual men frequently considered transactional sex, whether being paid by kathoey or paying women, a means to ensure greater sexual pleasure and satisfaction, described as being treated better, or '*because we want them to satisfy us*'. The opportunity to gain something monetary from the interaction may be secondary or as a bonus to the sexual attention:

> We like to go to kathoey because they treat us better than women and we might get some free beers. (Keomany, men's FGD#2, aged 25)

In female FGDs, participants most commonly portrayed that women have a passive role in relationships and sex. Women described feeling lust, but not being able to express it, or that women cannot initiate sex '*because they must be a lady*' and '*not lose their pride [honour/dignity]*'. Many women spoke matter-of-factly about men's tendency to seek concurrent partners, including transactional sex partners, due to women's inadequate sexual performance.

> If a wife is good at housework but not good in bed and cannot do 32 types of sex then her husband will go to a girl at any shop [implies service women], because those kind of girls are well-trained. They have a CD to train and practice, including how to put condom on. (Souvany, women's FGD, nightclub)

This quote infers a lack of sexual confidence among women, including in relation to condom use.

Many bisexual men favoured transactional sex for its **immediacy** and its ability to fill an 'urgent' need for sexual release.

> [Transactional sex happens] when we want to have sex, because as teenagers when we hang out and drink alcohol it stimulates our desire and we will act on such a desire immediately. (Persuth, men's FGD#2, aged 23)

Participants suggested that the balance of **attraction** between two parties determines the direction of payment, whereby the person who desires the sex more will pay the other person.

> It must be people who we want to like us, but they feel nothing for us, so we have to give them things. (Bounmy, men's FGD#1, aged 21)

Arrangements were flexible, and an arrangement which was initially negotiated as transactional may become non-transactional if there is enough desire from each party.

> It depends on satisfaction and desire; we pay when we want them, and we pay them no matter if they are women or men. When we get paid is when they want us. If they cannot afford us that means they don't want us enough, but if we also want them and they cannot afford us, we will just go with them for free. It depends on our desire. (Anousone, men's FGD#4, aged 35)

Numerous men also reported that buying sex occurs when a man does not have a regular sex partner or their primary **partner is unavailable** for sex, such as when they were living apart, when his girlfriend was menstruating, or in a new relationship with a female where sex had not yet been initiated.

> For some couples in a new relationship, they do not dare to ask for sex. Some men sleep with their girlfriends but some just go with service women…and that's it. (Thaly, women's FGD, garment factory).

6.4.4 Value of transactional sex

The **price** of transactional sex encounters varied widely and was reportedly dependent on the individuals' assessment of the person's attractiveness, social class, capacity to pay, level of desire, trust,

and length of the arrangement. People deemed beautiful, for whom the attraction was strong, or those who were considered 'high society' (commonly referred to as *hi-so* in Lao) commanded a higher price.

The most common figure given was 1000-2000 Thai Baht (~USD 30-70), but ranged from 50,000 Lao Kip (~USD 6) to four million Kip (~USD 500) – the cost of school fees. Aside from money, bisexual men said sexual transactions were often negotiated with **cash alternatives**, such as the exchange of alcohol, meals, use of motor vehicles, mobile phone, mobile phone recharge cards, jewellery, rent and bills.

> Paying in money is less frequent; it's more likely to be a deposit of material things; rings, necklace and things like that which are not money. (Moo, men's FGD#1, aged 24)

Where relevant, the transaction also included the cost of a room in a guesthouse.

6.4.5 Settings for transactional sex

Bisexual men commonly reported meeting transactional sex partners in specific 'shops' for service women (***haan sao bor li kaan***, literally 'service shop'; refers to the shop where they provide sexual services or have women to sell sex, but is different to a brothel), **nightclubs** and **beer shops** (casual bar were food is also served), or **massage parlours.** Only one person referred to meeting sex workers on the street. The *haan sao bor li kaan* was linked to an intention to buy sex, and one participant depicted going to a *haan sao bor li kaan* as a social affair, where 'men will accompany their friends to go to such a place'. Men described that it is easier and more direct to find someone to buy sex from the *haan sao bor li kaan* compared to a bar.

Unintended transactional sex tended to originate from beer shops, karaoke bars or nightclubs where men might either be propositioned for sex or after consuming alcohol**,** might seek out sex.

> Facilitator: Where do you meet sex partners when you are not planning to have sex?
>
> Participant: Karaoke shop where there are service women who come and sit together…One to two people will come and sit with you. Even though we go there with the intention of singing karaoke, those service women will find a way to make us want them because they want to sell a service [sex] to us. (Phone, men's FGD#2, aged 23)

In addition to physical settings, many bisexual men reported meeting transactional sex partners or arranging further meet ups through **mobile phone** and the internet, include the applications WhatsApp, Wechat, Instagram, and Skype. The use of technology was acknowledged as being a new phenomenon and was liked for being easy, convenient, and comfortable.

> It has changed a lot from before. Like, before if we wanted to have a sex partner, we had to drive to the shop where there are younger woman, but now when you have mobile phone, you can just call them

> and tell them a room number and meet at a guesthouse right away. (Tongboun, men's FGD#2, aged 24)

In general, **alcohol** was commonly discussed in the context of sex. Numerous bisexual men described having transacted sex when drunk, that they look for sex when drunk, or, as previously described, using alcohol as the commodity when transacting sex. Further, being drunk was an explanation provided for not using a condom during sex. There was no reference to other drug use and transacting sex. Women also discussed alcohol use before sex, including in the context of being pressured into sex after drinking.

Most frequently participants reported that sex occurred at a **guesthouse** (inexpensive hotel-like accommodation) or hotel; fewer participants said that sex could also happen at a private house or the *haan sao bor li kaan*. This choice appeared to be driven by convenience and potentially privacy, given many participants lived in dormitories or other shared accommodation. Only one person described not wanting to be seen by others going into a guesthouse with a transactional sex partner.

> And the main thing that they're thinking about when going to a guesthouse is whether their friends will see. Shy and afraid that they will recognise them, but if a house isn't convenient then we will go to guesthouse. (Meo, men's FGD#4, aged 20)

6.4.6 Temporal arrangement

As well as one-off sexual encounters, some men depicted transactional sex as a **repeated** or ongoing arrangement between a kathoey and a man. A prior transactional sex partner may be recontacted by telephone or Skype for sex.

> Yes, one of my close friends who comes from the provinces, he stays at a studio. A long-hair kathoey [transgender women] paid for his bills. For example, when he goes out with friends, if he runs out of money then he calls that kathoey to come pay for his bill. (Vanh, interviewee, aged 18)

As trust develops through the course of the transactional arrangement, the amount exchanged may increase.

Some men implied that a sexual relationship may begin as transactional but evolve into an **emotional** relationship, and that gifts may also be used as a sign of love and affection. The exchange of gifts rather than money may be an indication of intimacy.

> ...[if you] know, like and have loved each other for a long time then you buy things for each other, but if it has not been that long then you just give money. (Bouprasong, men's FGD#1, aged 24)

A few bisexual men also referred to **long-term**, age-discordant and financially beneficial arrangements between older men and younger women.

6.4.7 Negotiation of transactional sex

Some bisexual men specified that they mostly found transactional sex partners by **themselves**, while others said they were usually introduced through a friend. Only one male and one female participant referred to a *Mae Lao* ('female pimp'). Some men described actively seeking sex with service women or kathoey, while others described being approached first by these partners. Conversely, based on descriptions from bisexual men and women, when older women pay men for sex, this is uniformly initiated by the woman.

> They [older women] like to say, 'would you like to go with a older sister? I will pay for a guesthouse and will give you some money, and you just have sex with me.' (Vathsana, women's FGD, education faculty)

A few men explained that the amount and details of the **arrangement** were negotiated prior to sex happening and involved bargaining of the price. However, the payment or material exchange could happen after sex.

> There are negotiations on the price before having sex. Service women will charge for sex in Thai Baht, like maybe 1000 Baht or more. Then we will bargain with them, like 'can it be 500 Baht?' (Anu, men's FGD#2, aged 25)

As previously discussed, negotiations were portrayed as dynamic processes controlled by a combination of implicit, subjective and explicit factors. In particular, physical appearance, financial assets, earning capacity and level of attraction influenced bargaining power.

> It depends on incomes: if it's a student, they will get paid and those who are working have to pay their sex partner. (Kye, men's FGD#4, aged 22)

There was only one reference to the **power dynamics** during transactional sex, suggesting that the person selling sex may have to do whatever is asked of them to satisfy the paying person:

> If we are paying then we can do whatever we want to do with them, but if they are paying then we have to do whatever they want to satisfy them. (Tai, men's FGD#3, aged 21)

6.4.8 Condom use and perception of risk

Many bisexual men mentioned that sex with a FSW was a facilitator for using condoms, either because of perceived higher risk of HIV/STIs or because FSWs were more likely to carry condoms and initiate condom use.

> Sex workers sleep with many clients. We are at risk if we sleep with them; that is why we have to use condoms. (Nou, men's FGD#5, age missing)

> I don't use condoms. I only use them when I have sex with a female sex worker. (Xay, interviewee, age missing)

In contrast, a few men articulated that there was actually lower risk when having sex with FSWs than with other women, because FSWs were more likely to consistently practise safe sex.

> Female sex workers carry condoms with them all the time. Even though they sleep with many people, they protect themselves, so it's more risky sleeping with general women. (Dao, men's FGD#5, age missing)

Only one participant spoke about the risk and need to use a condom when they received money for sex as well as when paid for sex.

Many women also perceived that FSWs were high risk for HIV and STIs, and were concerned about being infected through their partners who had sex with service women.

> Facilitator: How much do you worry about sexually transmitted infections?
>
> Participant: Our boyfriends had sex with a service women without using a condom, so we're worried that we might be infected with a disease (Malikhone, women's FGD, education faculty).

Bisexual men attached less importance to **condom use when being paid** by kathoey or men for sex compared to FSWs, but in general, some men said they were more likely to use a condom when having sex with kathoey compared to other partners, while others said they were less likely to. A couple of men said there was no need to take condoms to a massage parlour, where transactional sex is often initiated; it was not clear if that was because they did not perceive a risk in this scenario or if the person selling sex from a massage parlour was likely to already have a condom with them. Only one participant specifically referred to condom use with a paying male partner, speaking of the last time he had sex with a feminine gay guy.

> The last time that I had sex I used a condom. Bought the condom at the guesthouse. He went to buy it. It was a normal feeling; we both were drunk. He gave me some money. He also paid for the guesthouse. (Pet, male interviewee, age missing)

Condoms were purchased from a guesthouse, which alongside pharmacies, were generally the preferred place for buying condoms. Most men reported not usually carrying condoms, so guesthouses were a convenient setting to obtain them right before sex. However, some men referred to being too shy to ask guesthouse staff for condoms.

A minority of participants reported using lubricant with condoms, and relayed that using lubricant makes sex less painful. Other participants were not sure what lubricant looked like or where to buy it.

6.5 Discussion

In this qualitative assessment of bisexual men's sexual behaviour and relationships in Laos, bisexual men commonly described engaging in sexual transactions with female, kathoey and male partners, including men both receiving payment and paying for sex. Transactional sex was described with varying degrees of formality, from meeting someone at a bar and exchanging 'some free beers' for sex, to visiting a specific 'shop' for FSWs. Transactional sex appeared to be normalised in this group of behaviourally bisexual men, with only one bisexual man describing not wanting to be seen by others when entering into a transactional arrangement; young women also portrayed material exchange as an acceptable part of sexual relationships.

Consistent with a previous study of bisexual men in Laos, the majority of men identified as being straight or heterosexual [318]. Reports on male sexuality in Asia often cite that financial need is a common reason for straight-identifying MSM to have sex with men or transgender women in the absence of attraction or bisexual/homosexual orientation [42, 175, 291, 413, 419]. Our study confirms that opportunity for financial gain is one reason why bisexual men seek sex with men or kathoey. However, other motivations for transacting sex, such as pleasure, were also apparent. Bisexual men in our study were not always the ones receiving payment, and bisexual men may also receive money from women for sex.

Bisexual men most commonly described selling sex to kathoey, and both buying and selling sex from women. This supports previous findings from Laos [4, 414], except that previous quantitative research suggests that bisexual men are equally likely to be paid for sex by male partners as by kathoey partners [414]. This difference may be due to variations in sampling method. Interestingly our findings differ from Cambodia, where long-hair MSM (male-to-female transgender people analogous to Lao kathoey) predominantly report selling sex to other MSM as opposed to buying sex [411].

While other studies in Asia report that MSM, male sex workers, and money boys (men who sell sex to MSM) commonly also have female sex partners [399, 415], including sex with FSWs, this study adds to existing regional literature by exploring the context of older women buying sex from younger men. Of concern, there was no indication that sex between a paying woman and a younger man attracted the same perception of risk as other transactional partnerships. In previous research, only 27% of bisexual men in Vientiane reported consistent condom use when selling sex to women [414]. In the circumstances where women are unaware that their partners engage in bisexual behaviour, they may underestimate the risk associated with condomless sex. Future research should engage directly with older women who buy sex and explore the associated circumstances and perception of risk.

While financial gain was a common motivation for selling sex, it varied from meeting basic needs, such as school fees or healthcare for family members, to obtaining desirable consumer goods, such as jewellery, mobile phones, meals and alcohol. This is consistent with other reports of transactional sex among MSM in the region [4, 411]. The majority of study participants were currently studying, and in Laos, it is common for men from rural areas to migrate to larger towns and cities, such as Vientiane, for education or employment opportunities [4, 149, 154]. Young migrants often face financial pressures [154], which may be compounded by social pressure to conform modern lifestyles [420,

421]. Data from this study suggest that selling sex is one way of meeting individual financial needs. Changing social and economic conditions in Laos instigating increased mobility, urbanisation and unemployment have previously been reported and may account for the apparent increase in young people transacting sex [137, 149, 154, 291]. Some men were drawn to transactional sex to obtain desirable but non-essential items, and thus may be more likely to transact sex casually and intermittently. This is in accordance with previous qualitative descriptions of transactional sex among MSM in Cambodia and Laos [4, 411].

Findings from this research demonstrate the fluidity between selling sex for money or pleasure; money is an important factor in sexual relationships among bisexual men, particularly with men and kathoey, but pleasure and attraction were also important. This supports prior studies in Cambodia and Vietnam which found that financial necessity, material gain, pleasure and desire similarly motivate men who have sex men to sell sex to men or transgender people [291, 411, 413]. Ngo, Ross (413) previously described the currency of attractiveness in negotiations, and it appears that bisexual men often approach casual sex as a negotiation, involving not only money or gifts, but also physical attractiveness, age, sexual desire and wealth. Transactional sex is highly contextualised and opportunistic, which allows behaviourally bisexual men to alternate between being the buyer and seller of sex, and between transactional and casual sex. Bisexual men also portrayed fluidity been transactional sex and emotional, romantic, or regular relationships. Prior work in Asia has also described the influence of social and emotional elements on transactional sex [4, 413]. The intersection of sexual desire and intimacy with transactional sex, as well as recurrence of some transactional partnerships, may lead to increased risk-taking by lowering motivation to use condoms [408], particularly given that sex with a known partner and diminished pleasure were two main reasons given for not using condoms in this population of bisexual men [416].

Transactional sex appears to be influenced by social conventions and economic influences; both men and women portrayed it as an accepted way to earn extra money and for men to engage in sexual practices that women were not willing or were socially inhibited from performing. Women may also prefer that their partners seek sex elsewhere rather than pressure them into sex/oral sex. From a public health perspective, women's low sexual confidence, including in condom use, may limit their agency to negotiate and practice safer sex, including oral sex with male partners.

Results suggest that bisexual men in Laos may have an unbalanced perception of HIV and sexual risk in relation to their reported behaviours. There was substantial qualitative evidence that bisexual men in this group prioritised condoms during sex with FSWs. Contrarily, there was no indication that bisexual men systematically considered the same risks for transactional sex with kathoey and male partners or when selling sex to women, and men appear less likely to use condoms in these instances. This may be in part due to more informal and opportunistic transactional sex with these partners and the perception that this is not sex work. Further, HIV campaigns in Laos have historically focused on FSWs, which may account for a higher perception of risk in these partnerships among both men and women in this study [42]. Previous research has demonstrated that a high number of sex partners and inconsistent condom use may increase HIV and STI risk-taking in behaviourally bisexual men engaging in transactional sex in Laos [414]. Results from this study expand on this by demonstrating

concurrency between transactional and regular sex partners, which may increase the risk of HIV and STI transmission [422-424]. Concurrent use of alcohol and intoxication during transactional sex was commonly reported, and raises concern for the potential relationship between alcohol consumption and risky sex [347, 379, 380, 425].

The risk associated with transactional sex is often described in terms of an unequal power relationship due to age, economic and gender disparities, with the person selling sex having reduced inhibitions to negotiate condom use during sex [9, 396, 426]. In this study, bisexual men commonly reported age-disparate transactional sex. This supports previous work in Laos describing that in sexual relations older age is associated with a social and kin-based responsibility to provide for younger men, who are also considered more desirable [4]. Age-disparity and HIV risk is most widely described in Southern Africa, with some studies demonstrating that younger women in sexual relationships with older men have increased risk of HIV [427, 428]. However, there is limited evidence on whether the risk of age-discordant relationships also applies between older women and younger men, or older men and younger men [429-432]. Economic disparities were evident through accounts of bisexual men selling sex out of essential need as well as the exchange of expensive assets, but it was not clear whether this influenced their condom use or risk. In other respects, many bisexual men portrayed strong agency when selling sex; they described selling sex positively and many men only exchanged sex for low-value items such as beer, a meal, or phone credit. Under these circumstances, power disparities may be less relevant.

These findings emphasise the need for improved access to accurate and relevant sexual health information among bisexual men and their potential partners, including women who buy sex. Content should highlight the risks associated with both condomless anal and vaginal sex, and paid and non-paid partners; it should promote consistent condom use; and encourage regular HIV and STI testing. Education is also needed on the importance and benefits of using lubricant with condoms, and health promotion should seek to make lubricant more readily available. The strategic use of antiretroviral therapy (ART) at a population and individual level should also be given stronger consideration for prevention [201, 210-212]. This needs to be supported by appropriate guidelines, improved linkages to HIV care, and education of policy-makers, healthcare workers, peer educators, and key populations on the use of ART for both treatment and prevention. Except for sex with FSWs, bisexual men had a low perception of risk. Subsequently, health promotion messages should not be exclusively framed around commercial sex or FSWs. Settings-based approaches may help to target interventions towards people with high-risk behaviour rather than narrowly defined populations, and thus be better able to reach those who do not identify as sex workers, clients, gay or transgender [397]. Health promotion should aim to develop skills and self-efficacy in negotiating sex and condom use when material exchange is involved. Both physical and virtual settings where transactional sex is initiated should be engaged in health promotion, including the expansion of programs increasing condom availability in guesthouses, bars and massage parlours [3, 136, 183, 184], peer outreach in entertainment venues, and the development of web and phone based platforms for reaching sexually-active men and women. Higher education institutions and dormitory accommodation may also be ideal settings to reach young men who are engaging in higher risk sex. In addition to health promotion, the results indicate a need for structural interventions to reduce barriers to HIV prevention and sexual health services. A number of

participants referred to selling sex in order to pay for school fees, and thus a student support scheme could reduce the reliance on transactional sex among this group.

There are a number of limitations to this study. The sample was mainly limited to young and well-educated behaviourally bisexual men. Results are not intended to be representative of the wider population of bisexual men in Vientiane but demonstrate a spectrum of experiences and attitudes relating to transactional sex. In addition, female participants were mostly young and discussion around older women may be speculative. Further research engaging with women who buy sex is needed to explore the context of these transactions in greater detail. Due to last-minute cancellations and participants not attending the scheduled discussions, the size of FGDs was smaller than intended; however, the intimacy afforded by the smaller groups enabled greater depth of discussion. FGD participants did not have to talk about personal experience, and data may reflect generalization or speculation. This may account for some sub-themes being more common in FGD than interviews, but these differences may also be due to a focus on probing recent episodic events in interviews.

In conclusion, this study found that financial and material transactions were normalised in the sexual relationships of this group of behaviourally bisexual men in Vientiane. Transactional sex was largely opportunistic, but there was some evidence of bisexual men proactively and assertively selling sex to meet essential needs. The fluidity and largely informal nature of transactional sex in this context suggests that health interventions that do not specifically target sex workers or their clients are needed in this setting, and may have broader applications in other contexts. Comprehensive approaches to health promotion should acknowledge the importance of material exchange in sexual relationships and encompass accurate knowledge, condom use, regular testing, and access to treatment. Both physical and virtual settings may be appropriate for reaching behaviourally bisexual men and their partners.

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Chapter Seven

7 . Access to sexual healthcare among bisexual men in Vientiane

Previous chapters have demonstrated the behaviourally bisexual men in Vientiane commonly engage in sexual behaviours that put them at increased risk for the transmission and acquisition of HIV and other STIs. Risk behaviours include multiple sex partners, inconsistent condom use, and engagement in transactional sex. Based on these risk profiles, behaviourally bisexual men should be regularly tested for HIV and STIs, which are often asymptomatic. Regular testing facilitates the early detection of disease to allow for prompt treatment, which improves individual health outcomes and prevents ongoing transmission of disease. There is a strong evidence base for early initiation of ART as a means of HIV prevention.

Chapter 7 uses data from the qualitative follow-up study to further establish the high-risk behaviour of behaviourally bisexual men, assess healthcare seeking behaviours, and explore the determinants of sexual health care access and utilisation in this population. This chapter integrates findings from FGDs and interviews with behaviourally bisexual men as well as with key experts working in HIV, sexual health, or with sexually diverse populations. The findings highlight multiple gaps in the service delivery of HIV and sexual health care, and practical ways to improve health-care seeking and access to comprehensive sexual health care among behaviourally bisexual men are discussed.

Chapter 7 represents the following paper in press:

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The results reported in this chapter are also presented in form of a policy brief distributed to stakeholders in Laos (see appendix C).

Declaration for Thesis Chapter Seven

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Declaration by candidate

In the case of Chapter 7, the nature and extent of my contribution to the work was the following:

Nature of contribution	**Extent of contribution (%)**
Study design, project management, data collection, data analysis, interpretation of results, manuscript preparation and review	75%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	**Nature of contribution**	**Extent of contribution (%)***
Nakhornphet Pasomsouk	Data collection, translation, interpretation of results, manuscript review	N/A
Peter Higgs	Interpretation of results, manuscript review	N/A
Vanphanom Sychareun	Local technical oversight, manuscript review	N/A
Margaret Hellard	Study design, technical oversight, manuscript review	N/A
Robert Power	Study design, technical oversight, manuscript review	N/A

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The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work.

Candidate's Signature [redacted] **Date** 11/9/2015

Main Supervisor's Signature [redacted] **Date** 11/9/2015

Factors influencing access to sexual healthcare among behaviourally bisexual men in Vientiane, Laos: a qualitative exploration.

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7.1 Abstract

In Laos men who have sex with men (MSM) are disproportionately affected by HIV, and bisexual behaviour among men is common. We conducted a qualitative study to explore access and influences on sexual health-care seeking among bisexual men in Vientiane. In 2013 behaviourally bisexual men were recruited from bars, clubs and dormitories for five focus group discussions and eleven in-depth interviews. Participants (aged 18–35 years) commonly reported high-risk sexual behaviours yet most had never been tested for HIV, and none reported testing for STIs. Common barriers to testing were low perception of risk, expectation of symptoms, fear of HIV, shyness, perceived stigma, confidentiality concerns, and waiting times. Many men were unaware of available services. Most clinics cannot provide comprehensive HIV and STI services. Strategies are needed to generate demand for testing, improve the capacity of sexual healthcare providers, and promote available services among behaviourally bisexual men in Vientiane.

7.2 Introduction

HIV counselling and testing are key components of comprehensive HIV prevention, care and treatment [5, 24]. Regular HIV and sexually transmissible infection (STI) testing ensures early detection of infection, which allows prompt treatment, reducing negative health outcomes and preventing ongoing transmission [5, 210, 212]. In Asia, men who have sex with men (MSM) have 18.7 times greater odds of HIV infection compared to the general population [25], and HIV prevalence upward of 10% is reported among MSM in urban areas of Thailand, Myanmar, China, and India [32]. In Lao People's Democratic Republic (herein referred to as Laos), MSM are a priority population for HIV prevention. A study in Vientiane (2007) demonstrated an HIV prevalence of 5.6% (compared to 0.2% in the general population) [48], while an integrated bio-behavioural survey among MSM in

Luang Prabang (2009) found no cases of HIV but moderate-to-high prevalence of rectal chlamydia (7.3%) and gonorrhoea (1.7%) [165]. Furthermore, 21% of MSM reported experiencing STI symptoms in the previous three months. The national target for HIV testing coverage among key populations is 80% [156], but in Luang Prabang, 16% of MSM reported being tested for HIV in the past year [165], and in Vientiane, only 6.3% of MSM reported having ever tested for HIV [48].

In Laos, behaviourally bisexual men (herein referred to as bisexual for the purpose of brevity) are an important subgroup of MSM when considering sexual health risk and access to HIV prevention services. Firstly, bisexual behaviour is relatively common among men in Laos: in one study, 8% of young men reported sex with at least one man and one woman in the previous three months [175], and in another, 39% of MSM reported sex with a woman in the previous three months [48]. Secondly, bisexual men report high-risk behaviours, including low rates of consistent condom use and multiple sex partners [318, 343]. Thirdly, bisexual men commonly self-identify as heterosexual or straight [318], and thus may be invisible to HIV prevention outreach, education and health services [82-84, 299]. In Laos, HIV prevention programs for MSM mostly target male-to-female transgender women (commonly known as *kathoey teng ying* or *kathoey phom yao* in Laos and herein referred to as 'kathoey') or self-identifying gay men [3, 4] and may not adequately reach bisexual men. The engagement of bisexual men with HIV and sexual health services in Laos is not known.

It is important to understand the influences on bisexual men's healthcare seeking in order to inform services and prevention initiatives that are better able to meet their needs. We conducted a qualitative study of sexual risk behaviour, healthcare seeking and determinants of sexual healthcare access and utilisation among bisexual men in Vientiane.

7.3 Methods

7.3.1 Study design and setting

In order to explore influences on healthcare access and utilisation, a qualitative design was employed using focus group discussions (FGDs) and in-depth interviews. The study was based in Vientiane, the capital of Laos.

HIV and STI testing at services accessible to MSM in Vientiane are summarized in **Table 20**. CD4+ testing, HIV treatment and management are available at two central hospitals. There are no specific public sexual health clinics, and STI testing in public hospitals is available through general outpatient services or gynaecology clinics [183].

Table 20 HIV and STI testing services available to men who have sex with men in Vientiane

	HIV testing[a]	STI testing[b]	MSM-friendly[c]	Anonymous[d]
15 district and central hospitals	✓	✓		
MSM clinic at Setthathirath Hospital	✓	✓	✓	✓
Drop-in-centre for male-to-female transgenders and other high risk groups (Peuan Mai)	✓[e]		✓	✓
Youth clinic (Vientiane Youth Centre)	✓[e]	✓[f]	✓	✓
Selected private clinics		✓		

[a] All HIV testing in Laos is done through sequential rapid antibody testing with Determine® and Uni-gold® and is free of charge.

[b] Hospital-clinics rely predominantly on syndromic management with limited microscopy or culture-based testing for chlamydia and gonorrhoea and blood testing for syphilis. Testing costs ~18USD (6USD for microscopy only).

[c] MSM-targeted or MSM-sensitive service (healthcare providers have specific training in MSM sexual health needs).

[d] Name not required to access service.

[e] Single rapid testing with Determine®; positive cases are referred to hospital for repeat rapid testing.

[f] Selected STI testing (gonorrhoea, genital warts, bacterial vaginitis, and cervicitis) available since late 2013. STI diagnoses are made through gram-stain microscopy and physical examination. For men reporting sex with men, urethral, anus, and oral specimens are tested. Syndromic management and presumptive treatment is practiced for all other STIs, or patients may be referred to a hospital for further testing.

7.3.2 Study population

Participants were behaviourally bisexual men (reported ever having anal or oral sex with men and/or kathoey, and ever having anal or vaginal sex with women) aged at least 18 years and currently residing in Vientiane.

Participants were screened for eligibility during recruitment and booking of FGD/interview. During the interviews, two men reported non-bisexual behaviour. One reported no sexual contact with women and another no sexual contact with men or kathoey, although he was dating and attracted to kathoey. These two interviews were retained as behavioural outliers as they gave useful insight into access to sexual healthcare for other MSM and in the latter case, the complexity of attraction and trajectory of behaviour in some bisexual men.

Five FGDs and 11 interviews involved 31 individual participants (four participated in more than one phase). Three to seven men participated in each FGD. Participating bisexual men were aged 18–35 years (mean age 22.7 years). Most described their sexual identity as 'man' (n=14) or *phu sai tae* ('real man'; n=12), both synonymous with 'straight'. Three participants self-identified as gay and one as 'gay (kathoey)'. Twenty-one men completed a survey prior to FGDs; half reported any higher education, and most (71%) were currently studying.

In addition, key experts working or involved with sexual health, HIV or sexually diverse populations were sought for their experience and opinions about the services available for bisexual men in Vientiane. Fourteen experts were interviewed from health services (n=6), local and international non-governmental organizations (n=4), government (n=1) and peer community (n=3). Positions included peer educators, doctors, project managers and senior officials (Table 21).

Table 21 Profile of key experts interviewed

Type of Organisation	Type of position held
Health service	Doctor
Health service	Manager
Specialised health service	Outreach worker
Specialised health service	Nurse
Government department	Senior official
Specialised health service	Manager
Local NGO	Senior official
Local NGO	Project manager
Community	Community leader
Specialised health service	Doctor
International NGO	Researcher
International NGO	Manager
Community	Peer educator
Community	Peer educator

7.3.3 Recruitment

From May 2013–April 2014, three Lao-national male peer researchers recruited bisexual men from bars, clubs, dormitories, a sauna and personal networks through purposive and convenience sampling. We sought men with varying sexual identity, gender attractions and sexual experience. Peer researchers observed patrons, made casual conversation, and introduced the study to potentially eligible men. FGD participants were invited to participate in an interview or confirmatory FGD at a later date. Purposive sampling was used to identify local experts through professional networks of Burnet Institute.

7.3.4 Procedures

FGD and interviews were conducted in a step-wise manner in order to allow for preliminary analysis and feedback into subsequent phases. Data collection was initiated with FGDs, followed simultaneously by interviews with bisexual men and experts. At the end of the data collection period, a confirmatory FGD was held with bisexual men to assess the resonance of the main study findings with participants and explore unclear or incomplete findings.

A Lao-national male facilitator (NP) led FGDs and interviews in Lao language at the Burnet Institute Lao office. All FGDs and interviews were audio-recorded, and FGDs also included a peer researcher present as note-taker. All participants provided informed verbal consent.

Prior to the FGDs, participants completed a questionnaire on socio-demographic factors. Sexuality was assessed by an open-ended question. In order to depersonalize sensitive data, FGD participants were asked broad questions about what they know, think or had heard from other people. Areas of exploration were informed by findings from an earlier survey of bisexual men [318, 343], health belief theory [250], and social cognitive theory [255] and included relationships, condom use, social norms, health beliefs, access to information and services, and desirable characteristics of services. Health belief theory considers that behaviour change is motivated by perceived benefits of change, seriousness

of the condition, and beliefs that one is susceptible to the condition and that the benefits of change outweigh the costs. Social cognitive theory considers that behaviour is determined through interaction between cognitive, behavioural, and environment factors, and places emphasis on social norms and influence. In-depth interviews were semi-structured and sought more personal information on sexual experiences, condom use and use of health services.

Participants were reimbursed 50,000 kip (approximately US$6) for expenses incurred and given condoms, lubricant and brochures on sexual health, HIV and available health services.

AB facilitated interviews with experts in English or English/Lao with verbal translation by NP (subsequently audio-recorded and transcribed). Experts gave written informed consent for interview.

7.3.5 Data management and analysis

Preliminary analysis was conducted throughout data collection and recruitment was concluded when new issues stopped emerging.

Interview transcripts and FGD notes were translated into English and imported into QSR International's NVivo 10 software [433] for management and analysis. Translations were amended in consultation with the bilingual facilitator to improve readability. Thematic analysis employed inductive (data-driven) coding of barriers and/or facilitators of healthcare access. Sub-themes were then grouped under themes reflecting four dimensions of health service access and utilisation (Table 22). These were influenced by the Health Access Livelihood Framework, which considers five dimensions of access to health care through a perspective of inequity due to poverty [434]. Data are presented under subheadings corresponding to categories and themes, and sub-themes are highlighted in the text.

To assess the credibility of data and researcher interpretation, preliminary findings were presented with opportunity for feedback during a confirmatory FGD with bisexual men and a workshop with key stakeholders. No substantial changes to interpretation resulted from this feedback.

No identifying information was collected and all data are anonymous. Experts are identified by type of organization and position.

7.3.6 Ethics

Ethics committees of the Alfred Hospital (141/09) and Monash University (CF12/3883–2012001848), Australia and the University of Health Sciences (009/13), Laos approved the study.

Table 22 Themes and sub-themes concerning sexual risk and sexual healthcare access and utilisation[a]

Category	Theme	Sub-theme
Behaviour	Sexual risk	Inconsistent condom use
		Alcohol before sex
		Transactional sex
		Multiple sex partners
		Concurrency (concurrent male and female partners)
	Health-care utilisation	HIV and STI testing history (HIV and STI testing)
		Consult with friends (friends)
		Self-treatment (self-treat)
		General clinic
Determinants of healthcare access and utilisation	Awareness of health, risk and services	Perception of risk
		Expect symptoms (symptoms)
		Fear of HIV
		Knowledge of available services
		Promotion and advertisement
		Restrictions on promotion (restrictions on promotion)
	Acceptability of sexual health services	Shyness
		Confidentiality
		Friendliness (friendly)
		Stigma
		Target clientele
	Health-system factors (availability and adequacy)	Comprehensive sexual healthcare (comprehensive services)
		Integrated HIV testing and management
		Private
		Quality
		Counselling
		Referral system
		Supplies and equipment
	Accessibility and convenience	Distance
		Long-waiting times
		Crowding (crowded)
		Cost
		Internet and telephone
		Community-based testing

[a] Category and themes respond to sub-headings, and sub-themes are bolded in text. Where wording in text differs, the exact phrasing is indicated in brackets.

7.4 Results

7.4.1 Behaviour

Sexual risk behaviour

Most men indicated a gender preference but varied in reporting primary sexual attraction to men or women, masculine men or feminine men. Irrespective of preference, most participants described current or recent relationships with both men and women. FGD participants, but fewer interviewees, also described kathoey sexual partners. Men generally reported both anal and oral sex with male or kathoey partners; few reported oral sex only. Most participants reported only vaginal sex with female partners.

Frequently, participants reported high-risk sexual behaviours. Participants considered it usual for men to have **multiple sex partners** regardless of sexuality, including concurrent and serial sex partners. Men sought concurrent partners due to boredom, desire for immediate sex, experimentation, primary partner unavailable, money incentive, or alcohol. **Transactional sex** was commonly reported and often involved both buying and selling sex. Participants most commonly described being paid for sex by kathoey, followed by buying sex from women.

Many men explicitly described **concurrent** male and female partners. No participants were married, but some men disclosed sex with a married man or that they would pursue sex with men and kathoey when married.

> Mostly when seeing men, they like to satisfy us, but for women, they always want us to satisfy them. Personally, I am seeing both a man and a woman because women are quite difficult to satisfy. I'm usually seeing around four people at the same time. (FGD participant)

Most participants indicated **inconsistent condom use**, ranging from infrequent use to reporting using condoms approximately 80% of the time. Few men reported always using condoms, stating preference for non-penetrative sex or abstinence if a condom was unavailable.

The most common reasons for not using a condom were: condoms were not available, sex with a boyfriend/girlfriend or known partner, reduced sensation and pleasure, trust, and not wanting to interrupt sex.

> I don't use condoms with women because we are close friends. Like when it's raining and they cannot go back to their room, so we have to sleep together; I'll check if there is a condom, but I still have to have sex regardless. (FGD participant)

Common motivators for condom use were: sex with a new or casual partner, sex with female sex workers, sex with kathoey, or partner perceived as promiscuous. Preventing disease and pregnancy were mentioned, with pregnancy usually the bigger motivator.

Alcohol and intoxication were central to the sexual narrative: men attributed condomless sex to intoxication and frequently described consuming **alcohol before sex**; men met sex partners in bars, nightclubs and beer shops; and alcohol often motivated sex with men and kathoey.

> If it's urgent, like when we are drunk, of course we will ask friends who are kathoey to help. We also have friends who are straight to help each other [relieve sexual tension]. (FGD participant)

Health-care seeking behaviours

Given the extent of sexual risk reported by this group of young bisexual men, they should have regular **HIV and STI testing** and treatment for symptomatic conditions. However, few participants had ever been tested for HIV. A few additional men reported testing but did not specify what for; none specified STI testing, even if symptoms were experienced.

> I sometime go to check my health, but I never get any STI tests as well as with HIV. (Interview participant)

Of six participants who mentioned testing and specified where, two reported testing at the MSM-specific Peuan Mai drop-in centre, two at a hospital, one at a clinic, and one in Thailand (Table 1). Several participants had undergone general health check-ups.

> I had checked my health last year during That Luang festival. I had acne around my body. I do not plan to get an HIV test. (Interview participant)

Participants preferred to seek advice from **friends** and **self-treat** with drugs bought from a pharmacy or traditional medicine. Experts also stated that men prefer to self-treat symptomatic STIs and raised concerns about antibiotic resistance due to incorrect or substandard antibiotics.

7.4.2 Determinants of healthcare access and utilisation

Participants and experts identified numerous factors influencing health service access, utilisation and acceptability, including perceived barriers, factors associated with choice of health services, and features described as favourable for broadening access.

Awareness of health, risk and services

Participants generally had low **perception of risk** and saw testing as unnecessary. Many mistakenly believed they would experience **symptoms** if infected with HIV or STIs so thought that they only needed sexual health services when sick.

> Never got an HIV test. I don't plan to have it yet. If I have HIV, I would become more sick. But I don't think I could have it. I am confident about me. (Interview participant)

Some participants did not perceive STIs as serious. Conversely, a few participants thought that testing could provide reassurance following unsafe sex, transactional sex, or having 'played around'.

Fear of HIV and knowing their status deterred participants from HIV testing.

> If I am infected with HIV, I will be gloomy and worry a lot. I will commit suicide. That is why I don't want to know if I have HIV or not. (Interview participant)

Experts reiterated this, suggesting stigmatisation and fear-based HIV campaigns encouraged the view of HIV as a death sentence. Resistance to HIV testing may lead to delayed diagnoses and compounds men's associations of HIV and poor health.

> They still stick with the previous advertisement images. This is a very scary disease. A very scary movie! It makes everyone afraid. . .It's going to be very bad; it's going to be the worst if they get infected with these diseases. (Interview, Project manager-local NGO)

Poor **knowledge of available services** was common; many men only knew of the hospital-based services or did not know where other services are located.

> I never had any advice and I do not know who I can talk to. (Interview participant)

In addition to health promotion to improve sexual health knowledge, risk perception, and demand for testing, many participants and experts alike mentioned the need for increased **promotion and advertisement** of health services.

> Some people don't even know. I know that there is a centre but I don't know where [it is]. They should promote the centre. (Interview participant)

Experts voiced concern over **restrictions on promoting** anything directly related to MSM in the general population. This limits awareness of MSM-friendly clinics and information related to their sexual behaviour and health, particularly for straight-identifying bisexual men.

Acceptability of sexual health services

Themes around acceptability reflect both perceptions of health services and actual experiences. A persistent theme was being embarrassed to access services for sexual health matters and potentially disclosing sexual orientation.

> [I] feel a little bit scared and shy around people at that place [public hospital]. [I'm] afraid that they will say that 'I am like this, like that'. [I'm] shy when they ask, 'what disease have you come to check-up for?' (FGD participant)

Shyness and embarrassment were interlinked with social and structural barriers such as stigma, clinics' public locations, and confidentiality concerns. Participants anticipated judgmental attitudes from healthcare workers and others who might see them attending the service, and STIs were considered 'a sensitive disease'. Some of the perceived barriers to utilizing sexual health services were due to lack of awareness of MSM-friendly services that provide anonymous HIV testing and counselling. Reservations about the **confidentiality** of sexual health services were common, and also mentioned by experts.

Many participants wanted **friendly** services with approachable, open-minded staff. Hence Peuan Mai drop-in centre (see **Table 22**) appealed to one participant:

> I am very impressed with the service of the drop-in-centre. They are very friendly, they are not arrogant. They serve us like family. (Interview participant)

Experts commonly expressed concern over **stigma** discouraging bisexual men from seeking sexual healthcare. Stigmatisation was allegedly directed at multiple levels—sexual orientation, STIs and HIV—and therefore cumulative. A community leader referred to a specific instance of stigmatisation experienced by a friend while accessing sexual healthcare:

> And also the healthcare worker . . . sometimes they ask very ignorant questions. This is a fact, a true experience from my friend. He said that the doctor asked him, 'Why did you have anal sex?' That guy is super straight guy. He doesn't look like me. And the doctor just asked him like that: 'Why did you have anal sex?' . . . He never went back to that clinic again. (Interview, community leader)

The preferred model of clinic services differed in terms of **target clientele**. As many participants preferred a male-only clinic with male health providers as wanted an MSM-specific clinic.

> It could be better to have a men's clinic that would help men to feel more comfortable with male doctor. (Confirmatory FGD participant)

> It's very good service at Peuan Mai drop-in-centre . . . people who work there are MSM, so that is why I don't feel shy. (Interview participant)

Experts thought that bisexual and other MSM would prefer a specialized, separate service for MSM or to have sexually diverse healthcare workers. However, two experts suggested that the employment of predominantly kathoey staff at Peuan Mai (see Table 1) was a barrier to bisexual men because it encouraged the perception that the service was only for kathoey:

> If I am the bisexual man or very straight gay man, I don't even know where I can obtain the service, the appropriate service. If I go to Peuan Mai centre . . . I see a bunch of kathoey. I don't feel comfortable there

> . . . They only know about how to treat kathoey or transgender. (Interview, community leader)

Health-system factors (availability and adequacy)

A barrier to sexual healthcare most commonly mentioned by experts, and to a lesser extent by bisexual men, was lack of **comprehensive services**. Many services only offer STI management or HIV testing, necessitating multiple visits to access complete sexual healthcare.

> I want to have specific centre because now there is only place which provides counselling, but when it comes to treatment, we still have to go to hospital or clinic. (FGD participant)

Experts described the appeal of a "one-stop shop" to avoid the need for ongoing referrals and prevent loss to follow-up.

> And also we cannot treat them, treat any disease. Just testing, and counselling. People expect this place to be a one-stop service. (Interview, outreach worker, specialized health service)

In support of this notion, participants who accessed HIV testing through Peuan Mai, which only provides HIV testing (see Table 1), had not sought other sexual healthcare.

> I play around, and I was worried that I was infected with some STI or HIV, so I went to check my health. I have a friend who is a peer educator; he suggested I visit Peuan Mai drop-in-centre. I regularly have an HIV test when I feel worried, but I don't access other health check. (Interview participant)

Some FGD participants favoured **integrated HIV testing and management**, although one expert thought that a MSM-specialist clinic's location within Setthathirath Hospital (see Table 1) discouraged access. The MSM-clinic is attached to a general clinic for HIV and tuberculosis patients, and thus attendees may be confronted by patients who appear sick or have advanced HIV. The expert suggested this perpetuates fear and is particularly intimidating for MSM with low knowledge of HIV:

> . . . some people might not feel comfortable to go there because mostly it looks like a treatment centre for positive people. And when you go there you feel like you're positive. (Interview, community leader)

Participants wanting to protect their anonymity favoured a **private** location separate from other services or in a "hidden place".

> Private room or place and don't want others to see. (FGD participant)

> Separate STI services from other department at hospital. (Interview participant)

Service **quality** was important to participants. Two men wanted the doctors and nurses to have excellent clinical knowledge as well as good management skills. Experts mirrored these views, calling for better service systems and management, more health personnel at testing centres, ongoing training opportunities, and specific training in providing appropriate and sensitive sexual health services to sexual minorities.

Numerous bisexual men wanted greater emphasis on **counselling** on treatment, prevention, and issues pertinent to people in same-sex relationships as part of sexual health consultations.

> If they go to general hospital, doctors only give drugs but they don't give much advice. But the most important thing is discussion and reassurance; providing us with information on how to protect ourselves in the future and how to solve problems. (Interview participant)

Many experts highlighted the lack of clarity or functioning **referral system** for HIV and sexual healthcare in Laos, weakening the overall response to HIV. Men might be sent to multiple clinics in pursuit of a particular service.

> And even the doctor might [be] like, . . . 'I'm not sure, maybe you should go there'. And always advise them to go to the middle of nowhere. 'Maybe you go to the CHAS [Centre of HIV/AIDS/STIs].' And CHAS says, 'oh lets go to Settha [Setthathirath] hospital', or 'let's go to Peuan Mai', or lets go there. So it's not very clear. (Interview, community leader)

An improved referral system was identified as a key service need. Some experts thought that the referral pathways should accommodate varying needs and acceptability based on same-sex sexual behaviour and sexual and gender identity.

An expert working at a specialized service voiced concern over **supplies**, including treatment stock outs and lack of specialized **equipment** for testing and diagnoses.

Accessibility and convenience

Participants commonly noted accessibility problems related to **distance** to sexual health services, either within Vientiane or from rural and provincial areas. For many participants a convenient location was a key determinant when choosing a clinic.

Experts also mentioned geographical constraints in terms of distribution of services specialized in or sensitive to the needs of sexually diverse populations and the distance to centres providing antiretroviral therapy (ART). While this study focused on healthcare access in Vientiane, numerous experts referred to geographical barriers for men residing in rural settings.

There was high demand for clinics offering quick service. Participants were discouraged by **long waiting times** and **crowded** services, with numerous men choosing less busy private clinics over hospitals, even if the clinic was less comprehensive:

> They will go there [to a private clinic] more than the hospital because it's near their house and it's not crowded. It's easy to talk and will go to hospital only when doctor at clinic suggests to go there. If there's no suggestion then will treat there at clinic and won't go to a place where there are many people and it's crowded and difficult. (FGD participant)

Few participants mentioned **cost** of services as a barrier to access, but many said that services should be cheaper or that they would get tested if it were free; these participants may be unaware that HIV testing and ART in Laos is already free, and that least two clinics offer free testing for STIs.

Several experts thought that **cost** impacted of health-seeking behaviour through direct costs, such as service and treatment, and indirect costs, such as transport. STI testing is charged to the patient at most clinics, as are STI treatments.

> And there some cases that they call in first, ask if this place offers them or provide them free medicine, drugs. And we don't have it so they don't come here once they know that. (Interview, nurse, specialized health service)

Bisexual men proposed **internet and telephone** hotlines as ways of increasing access to sexual health information and counselling. These were appealing for the anonymity and privacy they offer.

> Talking on the phone, not seeing each other's face is more comfortable; it's private. (FGD participant)

> Or create website to offer information . . . because these days there are many people using the internet. Want to have a centre, hotline number, chat blog, a place where people can access information about any diseases, like how you get infected, [how to] prevent [disease], and symptoms. These can make people know more and protect [themselves] more. (FGD participant)

To improve accessibility, some experts suggested **community-based testing**, such as mobile testing services and community-based, decentralized testing and ART.

7.5 Discussion

Behaviourally bisexual men in this study commonly described engaging in high-risk behaviours, highlighting their need for regular HIV and STI testing. Despite this, utilisation of sexual healthcare services was low and limited to occasional HIV testing among some men, and treatment of

symptomatic STIs among others. Results suggest that interventions targeting individuals as well as service-level and structural determinants are necessary to improve healthcare access among bisexual men in Laos. Poor knowledge and misinformation on existing services were major barriers to participants accessing available sexual health services in Vientiane. Other identified barriers, such as shyness, privacy and confidentiality concerns, and inconvenience were similar to those of female sex workers and the general community in Laos [185, 435]. While social stigmatisation appears common to all groups seeking sexual health care, bisexual men face additional stigmatisation for their sexual orientation. Themes such as acceptability, accessibility and health system factors (availability and adequacy) are reciprocated in other theories of health care access [434, 436], demonstrating the commonality of these factors to diverse populations and settings, as well as to healthcare-seeking for both screening and diagnostic purposes.

Our results highlight the need for health promotion interventions to increase demand for testing. Consistent with psychosocial models of behaviour change, targeted education is needed to improve HIV treatment literacy, convey that HIV and STIs can be asymptomatic, increase understanding of sexual risk, portray the benefits of regular testing, and correct misperceived barriers [241, 254, 437]. While these themes refer to individual factors, structural factors also influence demand for testing. Participants and experts emphasized the importance of promoting and advertising existing HIV and sexual health services as a simple way to promote uptake. However, experts identified restrictions on disseminating information specific to MSM, and higher-level governmental support is needed to make it freely available.

Findings indicate a need to better integrate HIV and STI services to ensure men are getting comprehensive healthcare and to reduce the need to access multiple clinics for sexual health needs. STI screening and treatment are key components of HIV prevention strategy [5], and integrating HIV and STI services may enable better use of resources and maximise health and prevention benefits. STIs such as chlamydia are often asymptomatic [438-441], and if left untreated, can be transmitted to sexual partners and increase HIV infection risk [60]. Most participants mistakenly believed that only experiencing symptoms warranted seeking sexual health care. Although syndromic management of STIs is often the mainstay practice in resource-limited settings [192, 442], this approach misses infections, and in Vientiane STI testing is available at numerous services, including some sensitive or specific to MSM [60]. STI prevalence is high among MSM, FSWs and kathoey in Laos [164, 165, 170], and given reports of condomless sex with all of these groups, is probably high among bisexual men. Lao hospitals and clinics must develop the capacity to routinely offer asymptomatic STI screens, but the availability of suitable technology remains a limiting factor.

Worldwide, sexual stigma has been associated with reduced access to HIV services [72]. Although stigma and discrimination of male-to-male sex in Laos is not as widespread, systematic, or oppressive as in some other Asian countries [75], experts still portrayed stigma as a major barrier to bisexual men accessing sexual healthcare, and participants anticipated negative attitudes from clinic staff towards their sexual orientation, sexual behaviour, or health status. Stigma may prevent men fully disclosing their sexual behaviour or orientation to healthcare providers, leading to improper care and inadequate advice and counselling [71, 82, 85, 443, 444]. Participants' preference for sexual healthcare to be

delivered through MSM-specific services, men's health clinics, or mainstream services varied, likely reflecting the variation in the sexuality and identity of bisexual men in Laos, and multiple approaches are required. Improving the capacity of mainstream healthcare providers to offer appropriate, sensitive and friendly sexual healthcare to sexual minorities may help to expand access, but other barriers, such as efficiency of service, friendliness and confidentiality, should also be addressed [69]. Providers and the community need advocacy and training to reduce homophobic attitudes, normalize sexual health and conversations around sexual behaviour, and promote STI services as routine healthcare [72, 442].

Alternative models for promoting uptake of HIV and sexual health services and reducing risk behaviour may be appropriate in Laos. Firstly, an approach trialled in Thailand using a free health check-up package may incentivise HIV testing and sexual healthcare by providing more tangible benefits to young MSM, appealing to interests in health, fitness and appearance [445]. Secondly, pharmacists, who prior research indicate often have poor knowledge of STI management and testing [157, 183, 446], are frequently the first point of contact for Laos bisexual men. Providing appropriate training and resources to pharmacists may be useful, with further research need to explore the most effective ways of involving them in sexual healthcare [447-449]. Thirdly, with the increased penetration of internet and 3G smartphone in Laos [126, 227] and high acceptability among bisexual men, internet and mobile phone applications may be appropriate to reach men with high-risk behaviour, including those with low engagement with sexual healthcare [192]. Work in Thailand demonstrates that online communication campaigns can successfully engage MSM in HIV education and increase uptake of HIV and STI testing [69, 450]. Mobile testing services may also improve the accessibility of testing and be targeted to areas frequented by bisexual men [5, 69, 397].

Our study has several limitations. The majority of the sample were young students, due partly to the ease of recruiting from dormitories compared to bars and nightclubs. Results demonstrate a spectrum of experiences and attitudes relating to sexual healthcare access and utilisation but might not be generalisable to the wider population of bisexual men in Vientiane. Due to last-minute cancellations and no-shows, FGDs were smaller than intended. However, the intimacy afforded by the smaller groups made it easier to explore issues in greater depth.

In conclusion, we showed that young Lao men with bisexual behaviour are an important group to target for HIV prevention and sexual health promotion. We identified low utilization of HIV and sexual health services despite high-risk behaviours. Increased emphasis on comprehensive sexual health care, improved promotion of services, and clarification of referral systems are needed to improve health care access and health and prevention benefits.

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Chapter Eight

8 . Discussion

This thesis provides the first detailed account of sexual behaviour among young bisexual men in Laos. In Laos, many MSM also have sex with women [48, 175], and research suggests that behaviourally bisexual or 'straight'-identifying MSM have lower access to established HIV prevention programs than self-identifying MSM [4, 10, 42, 78, 81, 82]. There is also concern that bisexual men broaden HIV transmission networks by linking groups with typically high-risk behaviours to those with lower risk [122, 269-274]. These sentiments have been echoed throughout Asia and globally, yet there has been minimal research focusing on bisexual men in Asia.

In order to inform HIV prevention priorities and initiatives which are relevant and accessible to behaviourally bisexual men, a more comprehensive understanding of risk, behaviours, and needs among this subpopulation of MSM is required [5]. The research undertaken in this thesis addressed this information gap in Laos and adds to the literature base in Asia. It produced detailed data with practical implications for the delivery of HIV prevention and sexual health promotion in Laos.

The research had six objectives:

1. To determine the comparative risk of HIV and STIs in behaviourally bisexual (MSMW) compared to homosexual men (MSMO) *in Asia*; and

Among bisexual men *in Laos*,

2. To develop a comprehensive understanding of their characteristics, identity and sexual practices;
3. To identify their risk and protective behaviours for HIV and STI transmission;
4. To determine individual, social, cultural and structural influences on sexual risk;
5. To assess the determinants of sexual healthcare access and utilisation; and
6. To describe opportunities to engage bisexual men in HIV prevention and sexual health services in Laos.

Chapter 2 reiterates that bisexual men in Asia are a sizeable subgroup of MSM and an important target for HIV prevention. The sexual network study discussed in Chapters 3 to 5 indicates the prevalence of risk behaviours among young bisexual men in Vientiane and alludes to the complexity of sexual

partnerships, identity and risk [318, 343, 397, 414]. The qualitative study discussed in Chapters 6 and 7 establishes a more in-depth understanding of the circumstances, motivations and influences on risk behaviour as well as health-seeking behaviour [416]. Together these studies demonstrate that young bisexual men in Laos are at high risk of HIV and STIs but have inadequate access to comprehensive sexual health care.

This chapter combines the findings of the quantitative and qualitative research components in order to highlight key targets for behaviour change and modifiers of behaviour. Implications are discussed in terms of potential approaches to HIV prevention and sexual health promotion in Laos. Finally, the limitations of the research and priority areas for future research are considered.

8.1 Key Findings

8.1.1 Comparative risk in bisexual and homosexual men

The first objective of this research related broadly to Asia, aiming to determine the comparative risk of HIV and STIs in behaviourally bisexual (MSMW) compared to homosexual men (MSMO) in Asia. A systematic review and meta-analysis found that MSMW account for almost a third of all MSM in studies of HIV and sexual risk among MSM in Asia (Chapter 2). Although many qualitative studies report that bisexual men have different behaviour, sexual identity and sexual networks to other MSM [34, 413], quantitative bio-behavioural surveys studies rarely differentiate between these sub-populations. The meta-analysis of available disaggregated data reported in Chapter 2 suggested minimal difference in HIV and STI prevalence between MSMW and MSMO, but MSMW are less likely than MSMO to be tested for HIV. These findings highlight the need for increased effort to engage bisexual men in HIV prevention services, including HIV testing.

8.1.2 Characteristics, identity, and sexual practices of bisexual men in Laos

The second objective of this thesis was to develop a comprehensive understanding of the characteristics, identity and sexual practices of bisexual men in Laos. Research presented throughout this thesis demonstrates the complexity of sexual orientation in Laos, which cannot be unanimously captured by behaviour, identity, or sexual attraction. Behaviourally bisexual men in Laos associate with different sexual identities and report varying sexual preferences, but bisexual identity appears rare. Most commonly behaviourally bisexual men identify as heterosexual or its local equivalents [318]. In the present study this was expressed as *phu sai tae* ('real man') or 'man' [416], both synonymous with 'straight'. This vernacular differs to that reported in previous Lao studies ('lad', '100% men', 'full men', 'complete men') but is comparable in meaning [4, 175]. The use of terms denoting gender to describe sexual orientation indicate that in Laos gender expression may be closely tied with sexuality, as has been previous reported in some Asian, Pacific and Latino cultures [42, 86, 110, 112, 113].

In previous typologies of MSM in Laos, authors have focused on young straight men being the partners of kathoey or effeminate men and usually engaging in insertive anal sex or receiving oral sex [48, 151]. The current research demonstrates that straight-identifying bisexual men also partner with men,

including masculine men [416], and as well as insertive anal sex, one quarter of men regard receptive anal sex as part of their usual practice [318]. Sexual preference and primary attraction do not necessarily fit prescribed notions, varying from women to men, masculine men to feminine men, and long-haired to short-haired kathoey, thus emphasising that straight-identifying bisexual men are a heterogeneous population, and existing categorisation of MSM in Laos [2, 4] may be inadequate. In addition to those identifying as straight, a small but notable proportion of behaviourally bisexual men in Laos self-identify as bisexual or homosexual. In Lao language this is expressed as being 'gay', which may be a reflection of Western notions of gay culture and homosexuality being incorporated into the local vernacular and social structure [4, 413, 451]. These findings are consistent with those from the *Mekong Erotics* report [4], and suggest that programs need to think outside of typical typologies to account for the fluidity and nuances of sexual orientation in this context [4].

Across Asia it is possible to draw numerous parallels in the expression of sexuality and gender [101, 413, 452]. Similar terms denoting 'real men' or 'complete men' are expressed in numerous Asian settings (*phu sai tem tua* in Thailand [10], *panthis* in India [47], *pro saat* in Cambodia) [419]) [4, 292, 413]. Despite these similarities, my research suggests that sexual orientation differs within populations and between countries. For example, the sexual networking study (Chapters 3 to 5) was carried out simultaneously in Vientiane, Laos and Hanoi, Vietnam using the same methodology [355]. Behaviourally bisexual men in Hanoi were considerably more likely than those in Vientiane to self-identify as bisexual (34% vs. 9%, respectively) or predominantly/exclusively homosexual (37% vs. 21%, respectively) [355]. Given that MSM who do not self-identify as gay/bisexual or who are less socially connected to MSM networks have lower access to HIV interventions [82, 84, 105, 319, 453, 454], greater effort might be needed to effectively engage with bisexual men in Laos compared to Vietnam. Identifying contextual differences such as these will help when assessing the applicability of interventions implemented in different settings.

Throughout this thesis the term 'behaviourally bisexual men' (abbreviated as bisexual men after introduction in each chapter) has been favoured to account for incongruity between men's behaviour and sexual identity. From a biological risk perspective, bisexual behaviour rather than identity is the direct cause of increased risk by potentially exposing men to a partner infected with HIV or STIs. Without disputing this association, the current research demonstrates that self-identified sexuality can also influence risk by impacting on access to HIV prevention programs and services [416], and heterosexual-identifying MSM may have higher risk behaviour than bisexual- or gay-identifying MSM [318]. This calls for a more nuanced view of sexual orientation for both research and programmatic purposes.

In both the quantitative and qualitative studies, participants were commonly characterised as young students. This is typical of previous studies of MSM and kathoey in Laos [48, 165, 170] and may be because older bisexual and other MSM are less connected through sexual networks, less likely to frequent bars and nightclubs, or less willing to disclose behaviour and/or participate in research. Based on this logic, young bisexual men in Laos have a higher risk profile than older bisexual men: attending bars and nightclubs is usually associated with drinking alcohol, which increases risky behaviour [416]; many younger bisexual men have larger sexual networks than older men; and some

young bisexual men sell sex to men to fund higher education (Chapter 6). However, more research is needed to unpack these associations. The findings presented in this thesis are most relevant to bisexual men fitting a young and educated profile.

8.1.3 Key targets for behaviour change and health promotion education

Based on research presented, the key targets for behaviour change among bisexual men in Vientiane are inconsistent condom and lubricant use, multiple sex partners, transactional sex, alcohol consumption, psychosocial issues and low rates of HIV/STI testing. These targets are discussed in terms of key risk behaviours reported by bisexual men (objective 3) and the individual, social, cultural and structural influences on sexual risk (objective 4). Understanding the context in which risk occurs is essential to successfully implementing behaviour change.

Of the key targets, the most amenable targets for individual behaviour change among bisexual men in Laos are condom use, test-seeking behaviours, and alcohol use. Consistent condom use and regular testing and management of infection mitigate the risks associated with multiple sex partners and transactional sex, while interventions aimed at decreasing harmful alcohol consumption have the potential to reduce sexual-risk taking as well as direct harms. Informed by the social ecological models of health (section 1.5.1) [238, 258, 259], research findings, and broader literature, Table 23 summarises the key risk behaviours and harms in bisexual men in Laos, the targets for behaviour change, and components of health promotion programs working at individual, interpersonal, community, institutional, and structural levels.

Condom use and lubricant

The research demonstrates that inconsistent condom use and low lubricant use are important targets for behaviour change in bisexual men. Behaviourally bisexual men reported low rates of CCU, which, combined with multiple sex partners, denotes high risk of disease transmission [318, 416]. Condom use was higher with transactional and casual sex partners than regular sex partners, but still less than 50% for all partner types [318]. Qualitative data showed that bisexual men perceive higher risk associated with sex with FSWs, while issues of trust complicate use with regular partners. Other important influences on condom use were condom availability, pleasure, and intoxication [416].

The consistent and correct use of condoms remains one of the primary components of HIV and STI prevention [5]. Different studies have shown that CCU reduces HIV transmission by 64–70% [191, 192]. In Asia, condom programming has had considerable success in reducing HIV and STI infections among FSWs and sectors of the general population [21], but the incorporation of MSM in local responses has been delayed [22]. In Laos condom programming has focused on commercial sex since 2003 [21], which might explain the relatively high rates of condom use during sex with FSWs reported in this study [414].

Table 23 Summary of key targets for behaviour change and recommended interventions working at an individual, interpersonal, community, institutional and structural level

Key risks/ harms	Inconsistent condom use; Multiple partners	Low HIV testing and sexual health care seeking	Transactional sex	Risky alcohol consumption	Mental health & psychosocial issues
Behaviour change	Consistent condom use with all partners (see Condom use and lubricant, Multiple sex partners)	Regular HIV testing, STI screening, and healthcare seeking for STI symptoms (see Regular testing)	CCU with all paid/paying sex partners (not just FSWs) (see Transactional partners)	Reduce risky alcohol consumption (see Alcohol consumption)	Improve mental health and well being (see Psychosocial issues)
Individual	IEC targeting knowledge, skills, risk perception, beliefs, attitudes, self-efficacy: - Risks of condomless sex - Benefits of lubricant (reduced pain, pleasure, prevent condom breakage) - Using condoms correctly - Behaviours increasing risk - Consequences of STIs - Encourage men to carry condoms (see Content of health promotion) Consider internet & mobile technologies for IEC (static information, personalised risk assessments, counselling) (see Technology-based interventions)	IEC targeting knowledge, skills, risk perception, beliefs, attitudes, self-efficacy: - Transmission of HIV & STIs - Risks of STIs - Asymptomatic illness - Benefits of early testing & treatment - Available services & practical information Beliefs about ART and STI treatment (see Content of health promotion)	IEC targeting knowledge, skills, risk perception, beliefs, attitudes, self-efficacy: - Risk with all partners, not just FSWs - Benefits of using condoms and lubricant consistently (see Content of health promotion) Acknowledge role of material exchange in sexual relations (see Transactional partners)	IEC targeting knowledge, skills, risk perception, beliefs, attitudes, self-efficacy: - Risky drinking - Alcohol-related harms - Strategies to reduce risks (see Content of health promotion) Promote preparedness (i.e. carrying condoms) when going out to drink socially (see Condom use and lubricant) Counselling on alcohol use (see Integrated and multidisciplinary services)	Individual counselling (see Psychosocial issues)
Interpersonal	Skills: negotiating condom use, disclosure, healthy relationships, intimacy, sexual consent, trust Peer support programs (see Delivery of health promotion) Consider internet & mobile technologies for peer-based outreach, social support, partner notification (see Technology-based interventions)	Social support programs Peer education (see Delivery of health promotion) Internet & mobile technologies for peer-based outreach and social support (see Technology-based interventions)	Skills: negotiating condom use, disclosure, power relationships (see Content of health promotion)	Skills: negotiating condom use, sexual consent (see Content of health promotion)	Group counselling Social support services Family support and awareness programs for families of bisexual and other MSM and MSM diagnosed with HIV (see Psychosocial issues)
Community	Encourage shifts in social norms around condom use & multiple partners Stigma reduction programs Use influential opinion leaders Utilise mass media Condom social marketing (see Involving mainstream channels)	Normalise sexual health Reduce sexual stigma (see STI screening)	Social security services for students Implement interventions where transactional sex is commonly initiated (see Venue-based health promotion) Use influential opinion leaders	Address social norms of alcohol use Utilise mainstream media (see Involving mainstream channels)	Stigma reduction programs Raise community awareness of mental health problems (see Psychosocial issues)
Institutional	Sexual health promotion in dormitories & schools Sexual health promotion in bars, nightclubs and guesthouses Consider how to engage guesthouses (see Venue-based health promotion)	Integrate HIV and STI services (see Integrated and multidisciplinary services) Promote & advertise available services Ensure privacy, confidentiality of services Train healthcare workers in providing friendly, sensitive and non-judgemental care to sexually & gender diverse populations Mobile testing clinics (see MSM-targeted or MSM-sensitive services) Routinely offer HIV and syphilis testing to key populations or those reporting high-risk behaviour (see STI screening) Increase training and tools for pharmacists and drug sellers (see Involving pharmacists) Include sexual health in general health check-up packages (see General health-checks)	Sexual health promotion in bars, nightclubs and guesthouses (see Venue-based health promotion)	Substance use support services (see Integrated and multidisciplinary services)	Inclusion of mental health and psychosocial services in services targeting MSM (see Mental health capacity)

Key risks/ harms	Inconsistent condom use; Multiple partners	Low HIV testing and sexual health care seeking	Transactional sex	Risky alcohol consumption	Mental health & psychosocial issues
Structural	Increase availability of condoms in non-traditional outlets (see Venue-based health promotion) Mechanisms to prevent stock-outs of condoms and lubricant Promote supportive policies to allow for information relevant to MSM to be distributed more widely Revise curriculum for school-based sex education (see Policy considerations)	Devise clear referral system Strengthen linkages for testing to treatment/care Strategies to reduce patient costs of testing and treatment • (see STI screening) Increase national priority of STIs and sexual health Decentralise HIV management (see MSM-targeted or MSM-sensitive services) Review national guidelines for ART initiation Strengthen supply chains for rapid tests and ART (see Antiretroviral therapy) Funding for services	Decriminalise sex work (see Policy considerations) Do not focus only on FSWs (see Transactional partners)	Increase national priority of alcohol-related harms	Supportive policies to protect sexually diverse populations from discrimination (see Policy considerations) Promote training and expertise in mental health (see Mental health capacity)

ART, antiretroviral therapy; CCU, consistent condom use; FSWs, female sex workers; IEC, information/education/communication; MSM, men who have sex with men; STI, sexually transmitted infection

Condomless sex with casual partners is considered a major driver of sexual risk in MSM. Research presented in this thesis suggests that regular partners also pose high risk of HIV and STI transmission among bisexual men. Bisexual men reported both male and female regular partners [318, 416], and coinciding factors can increase the risk associated with these partners: low levels of condom use with regular partners [318]; multiple regular partners in the past year [318]; concurrent relationships with men and women [416]; and fluidity between transactional and regular partnerships (Chapter 6). These findings indicate the need for health promotion to firstly, be inclusive of bisexual men in relationships, and secondly, highlight the importance of using condoms with all partners, not just with FSWs. Promoting condom use with regular partners, and particularly female regular partners, is complicated by issues of trust and disclosure [311, 413] as well as potentially a desire to conceive, and campaigns need to address these issues.

Condom availability is a major determinant of condom use among bisexual men, and warrants further attention. Condom programming in Laos focuses on pharmacies, convenience stores and guesthouses [183], but men who have unplanned sex and do not go to a guesthouse face barriers to condom use (Chapter 6). Behaviour change strategies also need to encourage men to regularly carry condoms, especially when frequenting bars and nightclubs where sex is often initiated, because my research showed that not having a condom readily available was one of the main barriers to using a condom [416].

Many bisexual men described never or only sometimes using lubricant during anal sex, including some men who were unaware of what lubricant looks like or where to buy it (Chapter 6). The non-use of lubricant can contribute to discomfort reported when using condoms during anal sex, condom breakage [198, 455], and account in part for the perception that using condoms is not enjoyable [416]. In Laos lubricant is not commonly available as a standalone product. The Number 1 Deluxe Plus branded condom brought out by PSI Laos aims to increase availability by providing lubricant in a packet with two condoms, but according to reports from key experts, this product frequently goes out of stock and coverage in retail outlets is low [3]. Additionally, this product has been largely marketed to kathoey, which may reduce its perceived relevance to heterosexual-identifying bisexual men. Also, the evaluation of the program was limited to kathoey [3]. According to reports, marketing of the

condom lubricant package focused on the importance of using condoms with every partner and using lubricant to prevent condom breakage [3], and thus may have missed an opportunity to promote condom and lubricant use as a way of enhancing pleasure and comfort during anal sex [416, 456].

Multiple sex partners

The sexual networking study demonstrated that bisexual men commonly have multiple sex partners, but it did not differentiate between concurrent or serial partners. Sexual concurrency has been highlighted for its contribution to HIV transmission, given its ability to increase network connectivity and exposure during acute infection [457]. Although empirical evidence of the effects of concurrency on population-level HIV transmission is inconclusive [458, 459], having multiple sex partners increases likelihood of exposure to HIV, and in the event of infection, concurrency increases risk of transmission to partners [422-424, 460-463].

The qualitative study provided greater context to interpret the quantitative data. Bisexual men report commonly having two to three partners at a time, or to a lesser extent, being in serial monogamous relationships. Many bisexual men specifically report concurrency between male and female sex partners, which, if men are infected with HIV and STIs and condom use with female partners is low, indicates high probability of transmission [416]. In addition, lack of disclosure of bisexual behaviour to partners makes concurrency particularly problematic, because it prevents sexual partners from making an informed decision about their behaviour and risk.

The potential for bisexual men to serve as a bridging population between high- and low-risk networks is frequently mentioned, although empirical evidence of this is inconclusive [122, 269, 273, 299, 463-465]. The work contained in this thesis provides further theoretical support for transmission between bisexual men and their female partners in Laos and more broadly in Asia (Chapter 2), but the lack of biological data in the sexual networking study precludes determination of the actual risk.

Transactional partners

Through both quantitative and qualitative accounts, this research established that it is common for behaviourally bisexual Lao men to transact sex, including both buying and selling sex, and sex with men, women and kathoey (Chapters 5 and 6) [414]. This can influence men's risk of HIV and STIs in several ways. It appears that transactional sex holds no greater risk than sex with other partners, but partaking in transactional sex is a marker for bisexual men engaging in higher-risk behaviours overall, in particular having a higher number of sex partners [414].

The participants reported low numbers of transactional partners; for example, bisexual men who only sold sex reported a median of five partners to whom they sold sex [414]. Bisexual men appear to negotiate transactional sex informally and often opportunistically, with age, perceived wealth, appearance and sexual desire influencing the negotiation and direction of payment. There were several indications of bisexual men selling sex out of financial necessity, but for many men, materialistic gains or pleasure were stronger motivations.

Although CCU was higher with transactional sex partners than casual and regular partners, condomless sex was still commonly reported [414]. Transactional sex was often associated with sexual concurrency with other partner types, which plausibly enhances the risk of HIV and STI transmission within sexual networks. The findings demonstrated an overlap between buying sex, selling sex, casual sex and sex with regular partners, and the fluidity between these partner types can influence the perception of risk and subsequent use of condoms.

Based on these findings, interventions framed around 'sex workers' are unlikely to be appropriate for this population, but health promotion context should acknowledge the role of material exchange in sexual relationships. Highlighting the importance of CCU with all sex partners, not just FSWs, remains a priority. In Laos transactional sex frequently transpires in bars, nightclubs and beer shops rather than dedicated brothels or sex-on-premises venues; this makes it harder to implement condom programming than in settings where a more formal commercial sex scene exists. Further research is needed to identify whether particular venues in Laos could be targeted to reach high proportions of men who sell or buy sex.

Alcohol consumption

The sexual networking study established that regular alcohol consumption (weekly) and frequently drinking before sex was common, particularly among heterosexual-identifying bisexual men [318]. Further, men who reported drinking regularly reported lower condom use frequencies than those drinking less than weekly. Entertainment and hospitality venues where alcohol is usually consumed, such as bars, beer shops and nightclubs, were some of the most frequently reported settings for meeting sex partners and were the main setting reported by heterosexual-identifying bisexual men [397]. Although causal relationships are unsubstantiated, consuming alcohol before sex is commonly related to condomless sex [84, 379, 466]. Anecdotally, many bisexual men in the qualitative study did not use a condom because they were drunk at the time, and sex was commonly described in the context of alcohol [416]. Plausible explanations for the relationship between alcohol and condomless sex are disinhibition, cognitive impairment or sensation seeking, but the relationship could also be because sex partners are commonly met in venues where alcohol is consumed [347, 379, 380].

The frequency of reports of alcohol consumption and drinking to intoxication in these samples highlights the need for alcohol harm reduction programs among young bisexual men in this setting. Harmful alcohol consumption is prevalent across the Lao adult population, and per capita consumption and prevalence of alcohol use disorders is higher than regional averages. In 2010, 22.5% of adult males and 7% of adult females reported recent heavy episodic drinking, while in comparison, 2.2% of males in Thailand, 2.6% in Vietnam, 3.2% in India, and 16.8% in Australia reported heavy episodic drinking in the past month [467]. Findings are inconsistent on whether sexual orientation is associated with harmful alcohol use among young men [468-471], but some studies have demonstrated higher rates of harmful alcohol use among young gay or bisexual men than heterosexual men [472-477]. Based on the results presented in this thesis, further investigation into alcohol-related harms among bisexual men and other MSM is warranted in the Lao context.

Psychosocial issues

Aside from sexual risk, this research revealed psychosocial issues which are pertinent to bisexual men in Laos. Firstly, risky alcohol consumption was common, as discussed above. Secondly, mental health issues affecting bisexual men in Laos were evident in the qualitative study, including suggestions of self-harm, depression and family problems [416]. These were described as stemming from sexual or HIV stigma, which also inhibited access to HIV testing and sexual health services. Thirdly, qualitative research implied that a subset of bisexual men sell sex out of essential need for finances to support their education or family's welfare (Chapter 6).

The contribution of sexual stigma and discrimination to mental health problems in sexual minorities, including bisexual men, is widely reported [74, 478-480]. In settings worldwide, there is overwhelming evidence that among young people, same-sex behaviour, attraction or identity are associated with poorer mental health outcomes, including suicidal ideation, than in the general population [480-486]. Emerging research from India [478, 487-489], China [490], and Vietnam [491, 492] indicates high prevalence of depression, anxiety disorder and suicidal ideation among MSM and transgender populations in these settings, and mental health disorders have been associated with sexual risk behaviours [491, 493, 494].

These three psychosocial issues are a concern in their own right, but as discussed, can be associated with sexual risk behaviour and low healthcare seeking. To promote comprehensive sexual health and wellbeing, it is equally important to support psychosocial wellbeing in this population. Individual and community-level programs are needed to target mental health, alcohol use and social security among bisexual men. In addition, programs promoting acceptance of sexually and gender-diverse populations in the general population, healthcare system, and families of MSM are called for.

Regular testing

Despite reporting high-risk sexual behaviours, such as condomless sex and multiple sex partners, utilisation of healthcare services was low among bisexual men in the current research. Uptake of HIV testing was poor, and use of STI services was limited to symptomatic treatment [416]. Many men preferred to self-treat STIs with pharmacy-bought antibiotics or traditional medicine, while others described not seeking any care when they had previously experienced symptoms. There was a common misbelief that men would experience symptoms if they were infected with HIV or an STI, and this was a major deterrence to seeking sexual healthcare otherwise. Knowledge of available services was poor and further inhibited access. Fear of HIV and belief that HIV is a death sentence were also barriers to testing.

Frequent HIV testing in order to ensure early detection of infection is increasingly endorsed in national and international guidelines [5, 24, 495]. HIV testing is the first step in the cascade of care and necessary to initiate TAP [201, 210-212]. Evidence shows that undiagnosed HIV contributes disproportionately to new infections [304-306], thus regular testing is essential to ensure early diagnosis. In addition, early treatment of HIV greatly improves clinical outcomes and delays disease progression [11]. Although recent and disaggregated data for Laos is not available, the meta-analysis of

HIV and sexual risk among bisexual men in Asia found that MSMW were significantly less likely to report a prior HIV test than MSMO (Chapter 2). Consequently, encouraging regular HIV testing should be an integral component of HIV prevention programs targeting bisexual men in Laos.

In addition to HIV testing, regular screening for STIs is important to detect asymptomatic infections. As discussed in Chapter 7, STIs such as chlamydia are often asymptomatic, [438-441] and relying on syndromic management may miss infections [496]. Untreated infections can lead to serious complications, transmit to other sex partners, and increase the infectiousness and transmissibility of HIV [62]. There is only weak evidence for the benefits of asymptomatic screening and treatment of gonococcal and chlamydia rectal infection [5, 497], but where facilities exist, this is the recommended approach in key populations [5]. Syphilis screening is less resource-intensive, and the WHO recommends routine screening in all MSM [192]. STI screening appears to be completely absent in this group of men in Laos, and greater integration of STI testing into existing sexual health services is called for.

Although the determinants of sexual healthcare access and utilisation among bisexual men in Laos largely align to those previously reported by young people and FSWs in Laos [185, 435], those reported by MSM in other Asian settings [73, 79, 498], and established theory [434], there are several specific and important considerations for bisexual men. The complexity and variation in sexual identity among bisexual men in Laos means that MSM-specific services is not necessarily the optimal model for all bisexual men. Involving mainstream services such as public hospitals and private clinics would improve geographical accessibility, but social and structural barriers relating to these services need to be addressed to improve uptake. The capacity for healthcare workers to address bisexual men's needs in a way that is sensitive, comprehensive, non-judgmental and confidential remains paramount [416]. Considering that bisexual men in Laos commonly identify as straight/heterosexual [318, 416] and perceive powerful stigma, they are unlikely to disclose male-to-male sex behaviour to healthcare workers [443]. This prevents them from being offered an HIV test or anal and oropharyngeal STI testing. Non-disclosure also impedes partner notification when bisexual men do test positive for HIV or STIs. Strategies are needed to support men to disclose their behaviour and status to partners.

8.2 Implications for programs and service delivery

This section considers the determinants of access to health (objective 5) and opportunities to engage bisexual men (objective 6) in order to reflect on the implications and practical applications of the work to local prevention initiatives and health services. The findings draw from the systematic review (Chapter 2), sexual networking study (Chapters 3 to 5) and qualitative study (Chapters 6 and 7). Opportunities are discussed in terms of content, delivery and services. In addition, local capacity and factors that limit the realisation of these opportunities are considered.

8.2.1 Content of health promotion

Based on identification of key targets for behaviour change and health promotion in section 8.1.3, essential inclusions in health promotion messaging aimed at reaching bisexual men in Laos are: CCU

with all sex partners; use water-based lubricant with condoms during anal sex; STIs and HIV can be asymptomatic; consequences of STI infection; seek regular HIV testing; benefits of early ART; available health services; alcohol-related harms; and strategies for reducing risky drinking. Importantly, health promotion content should also promote skills-building, such as correct condom use, negotiating condom use with various partners, and navigating issues around condom use and trust (Table 23).

Numerous findings indicate that a negative or fear-inducing approach to HIV and STI prevention in Laos will be counter-effective. Although increasing perception of susceptibility and seriousness of a condition is a central construct of many models of behaviour change (see section 1.5.1), the potential for fear-arousing arguments to lead to defensive coping strategies and avoidance is widely reported in the literature [263, 499-502]. The current research indicates that among bisexual men, fear of HIV is a persistent barrier to seeking testing, as is the emphasis on symptomatic presentation of STIs [416]. Further, the association of HIV with death may lead to stigmatisation of people living with HIV and key affected populations. This has also been reported more widely in Asia [319]. Although there was some evidence that bisexual men benefit from a greater sense of the seriousness of STIs, this needs to be balanced by programs targeting self-efficacy [243, 502]. More positive sexual health messaging should emphasise the benefits of regular testing, early diagnosis and treatment, promote HIV as a manageable disease and improve treatment literacy [503]. In addition, health promotion messages should shift their focus from the symptoms of STIs to the behaviours putting men at risk of infection and highlight that HIV and STIs are often asymptomatic.

Campaigns which solely emphasise the adverse consequences of condomless sex have limited effect on behaviour change if they fail to address the reasons why people have sex and why they do not use condoms [456]. Based on the present research, bisexual men in Laos commonly seek multiple sex partners for pleasure and enjoyment, but they perceive that condoms reduce their pleasure [416]. The role of pleasure is also recognised in the WHO working definition of sexual health [8]. Despite the marketing of condom and lubricants to MSM and kathoey in Laos [3], knowledge and use of water-based lubricants among behaviourally bisexual men was low in these studies [318, 416]. Bisexual men may be more responsive to sex-positive messaging which promotes enhanced pleasure when using condoms with lubricant [456]. There is also a role for broadening sexual education to incorporate positive messages on relationships, sexuality, consent and pleasure.

A pervasive reason for bisexual men not accessing sexual health services or testing is that they do not know where to access the services [416]. Further, as discussed in Chapter 7, many perceived barriers to services, such as cost and confidentiality, fuelled by misinformation and low awareness. The promotion of available services, including practical information on how to access them and what to expect, is a critical need identified through this research.

8.2.2 Delivery of health promotion

Currently health promotion for MSM in Laos is predominantly delivered through peer education, with targeted programs run through PSI, LaoPHA and the PCCA. However, no formal evaluation of peer education among MSM has been conducted. It was unclear how relevant peer education would be for

heterosexual-identifying bisexual men, given many do not associate with peers who are gay or bisexual. It was thus encouraging that some bisexual men described having learnt about HIV or sexual health services through a peer educator [504]. However, misperceptions about HIV and STIs and poor knowledge of treatment remain common [416]. A previous evaluation indicated that MSM peer educators in Laos lack knowledge on the benefits of early treatment with ART [505], and ongoing training for peer educators is required. In addition, based on experience and costing carried out in Thailand, peer education is more costly and less effective at linking MSM to HIV testing services than internet-based technologies and mobile clinics [69]. These results suggest that while peer education provides opportunities to reach bisexual men in Vientiane, the content needs reviewing and evaluation is essential to ensure the effectiveness of programs. The delivery of health promotion should be expanded beyond peer education; appropriate channels might include mainstream channels, venue-based health promotion, information and communication technologies, and pharmacists/drug stores.

Involving mainstream channels

Previous studies in Asia have indicated that MSM often do not perceive the risks associated with anal sex, due to the focus on heterosexual transmission, and specifically vaginal sex, in mainstream prevention campaigns [42]. The current research demonstrates that heterosexual-identifying bisexual men have lower knowledge of anal transmission risks than bisexual/homosexual-identifying bisexual men, which suggests they have lower access to information targeting MSM [318]. Some bisexual men also report anal sex with female partners [318]. To ensure wider coverage, mainstream channels for health promotion and services should incorporate information and services relevant to MSM, such as information on anal sex. This will ensure that relevant information is still available to men who are not attached or chose to disassociate from networks of gay, bisexual and transgender people, and thus improve access to heterosexual-identifying bisexual men. Appropriate channels include school-based sex education, dormitories, mainstream bars and nightclubs and mass media.

Venue-based health promotion

Opportunities for settings-based health promotion are discussed in Chapter 4. Based on settings where bisexual men report meeting their sex partners and associations with risk behaviour, the research indicates the potential for venue-based health promotion in bars, nightclubs and beer shops to reach large numbers of bisexual men, including those with high-risk behaviour and heterosexually-identifying bisexual men [397]. The importance of drinking establishments was reiterated in the qualitative study [416]. Health promotion and condom marketing in these venues could increase the demand and availability of condoms at critical time points when men are thinking about sex and meeting sex partners. Based on prior experiences from PSI Laos, marketing condoms in bars and nightclubs needs to balance visibility of condoms, discreteness, and the expectations of bar owners, management and patrons [183].

In the sexual networking study, participating bisexual men were young and often studying and living in dormitories. This informed sampling for the follow-up qualitative study, in which university dormitories were a key site for recruiting bisexual men. This in turn suggests that dormitories are an

appropriate setting for health promotion capable of reaching bisexual men. Sexual risk among young people living in dormitories is unlikely to be exclusive to bisexual men, and these interventions could have wider value in promoting sexual health among young people.

Among bisexual men, guesthouses are an important setting for both meeting sex partners and having sex, including with transactional sex partners (Chapters 4 and 6) [397]. PSI have found guesthouses to be a valuable setting for condom marketing [183], and encouragingly, bisexual men reported often getting condoms from guesthouses. Programs should continue to make condoms readily available in guesthouses and consider other ways to engage guesthouses in HIV prevention.

Technology-based interventions

The research presented in this thesis highlights the high acceptability and increasing relevance of information and communication technologies to reach bisexual men in Laos for sexual health promotion interventions. Although bisexual men did not commonly report using the internet or mobile phones to meet sex partners in the sexual networking study [397], three years later, the use of these technologies was much more apparent in the qualitative study, as discussed in Chapter 7 [416]. This may reflect the increasing popularity and accessibility of mobile phones in Laos and more broadly in Asia [126, 227, 506]. Bisexual men reported using mobile phone applications and the internet to meet sexual partners, as well as for social uses and viewing pornography (Chapters 6 and 7) [416].

Many men requested that sexual health information be available through the internet and telephone hotlines [416]. These technologies are favoured because of their anonymity and privacy. In Vientiane, one of the major barriers to accessing testing and sexual healthcare is lack of knowledge of available services or misperceptions of their suitability. Websites and mobile technologies are widely accessible platforms that could be used to help men choose a sexual health services most suitable to their needs and preferences, use geolocation services to identify local services, and provide complete contact information. The B-Change Group have developed and implemented such technology in five major Asian cities. Formative research from Asia demonstrated that HIV-positive MSM have a strong preference for a website or app to help them share experiences with other HIV-positive MSM, seek emotional support, find local health/social services, and ask questions about medications [507]. Informed by this research, B-Change developed the multilingual app 'PLUS', which provides a platform for HIV-positive men to locate services, provide and access feedback on services, connect with others in their community, ask questions and access educational information [507]. A similar platform, 'BE', has since been developed for sexually and gender diverse young people [508].

Elsewhere, the role of web-based applications are increasingly considered for both their association with high-risk behaviour [391, 509, 510] and opportunities to reach and engage with MSM [222, 223, 226, 394]. Applications for web-based interventions range from static mediums for exchange of information and advertisements to dynamic and interactive spaces which can provide personalised advice and foster community and communication around pertinent issues. Existing applications include counselling [384, 450], risk assessments [384, 511], educational sites [512], partner notification [388, 513], testing [221, 514], videos [220, 224, 515], outreach through chatrooms and social media [389, 516], peer support programs [507], appointment booking [450, 511], test reminders

[388] and promoting ART adherence [517]. These can be administered through dedicated websites, social networking sites [224], text messaging [518], or sexual networking mobile phone applications ('apps') such as Grindr [223].

While the evidence of web-based strategies for health promotion remains conditional, they are recognised for their ability to provide highly accessible, convenient and anonymous information, and are particularly valuable where same-sex practices are illegal or stigmatised [192]. In Peru, an online intervention involving motivation videos showed greater benefits than print media among non-gay-identified MSM, significantly increasing intention to get an HIV test [220]. Closer to Laos, the Thai campaign known as Adam's Love has used online outreach and social media to create an engaging platform to increase awareness of HIV and STIs, encourage regular HIV testing and provide expert advice. Over the study period, one quarter of men testing for HIV/STIs at the Anonymous Clinic said they were testing because of the Adam's Love website, and 15% of MSM enrolled in testing through the website were diagnosed with HIV [450, 519]. Further, a modelling and costing study based in Bangkok found that internet-based technologies are the most effective way to recruit MSM for HIV testing [69]. Based on our study findings and international experiences, online platforms for health interventions should be strongly considered for reaching bisexual men in Laos. While initially online platforms could focus on the static exchange of information, they have the potential to evolve into dynamic and interactive technologies such as modelled in Thailand [450].

Involving pharmacists

Based on qualitative data, bisexual men generally prefer to self-treat STIs rather than attend a clinic [416], which is consistent with previous research in Laos [435]. Existing research identifies that over-the-counter management of STIs in Laos is problematic [446], which was also insinuated by key experts in the current study. As discussed in Chapter 7, problems include use of poor quality or non-recommended drugs [157]; asides from issues around treatment, pharmacies also represent a missed opportunity for prevention counselling. In other settings, pharmacist training programs have helped to improve recognition of symptoms and appropriate management, increased referrals to health centres and increased prevention counselling [447-449]. Further research should explore the acceptability and effectiveness of training programs for pharmacists and drug sellers in STI treatment in the Lao context.

8.2.3 Appropriate models for HIV and sexual health services

Previous sections have identified the need for bisexual men to regularly access sexual health services for detection and management of HIV and STIs and prevention counselling. This section considers the research's implications for how these services should be best delivered to reach bisexual men in Laos.

MSM-targeted or MSM-sensitive services

There are multiple models for providing HIV and STI services to MSM. These include mainstream STI services, MSM-specialist clinics, community-based VCT offered through community organisations or social venues, and mobile clinics [520]. Findings from this research suggest there is no single optimal

model for providing sexual healthcare to bisexual men in Laos. Preferences for an MSM-specific or male-only clinic were split, and many men chose to use mainstream services [416]. Each model has its own advantages and disadvantages, and the emphasis on these differs between individuals depending on their self-identity and personal circumstances. For example, stigmatising and judgmental attitudes have been reported from bisexual men accessing mainstream services, but MSM-specific services can inadvertently disclose men's behaviour and contribute to stigma. MSM-specialist models, such as community-based testing, often do not provide comprehensive services, so strong linkages to treatment and care are necessary. Focusing on MSM clinics alone may perpetuate geographical barriers to services, given there is unlikely to be sufficient resources to run multiple services.

Training healthcare providers in mainstream services to increase knowledge and sensitivity to the sexual health and psychosocial needs of MSM is an important strategy for improving access of services to bisexual and other MSM. This approach has demonstrated success in increasing uptake of HIV counselling and testing services in Bangkok [521]. Another option is to employ healthcare staff or peer educators who are MSM within mainstream services. Based on the current research, gender-specific healthcare workers are highly regarded by bisexual men. This service is already available at a youth clinic in Vientiane, which also provides MSM-friendly services [416]. Other options for increasing geographical accessibility include mobile testing and counselling services and decentralisation and task-shifting for ART services [5, 69]. Use of rapid testing for HIV is standard in Laos and is easily adapted to community-based or mobile testing. There is also growing global interest in HIV self-testing, particularly in populations with high burden of HIV and low uptake of HIV testing, which may apply to bisexual men in Laos. The application of self-testing in Laos needs to consider local HIV prevalence, how to distribute test kits, affordability, local acceptability of self-testing, strengthening linkage to care and local regulation [522-526].

Integrated and multidisciplinary services

A cross-cutting issue affecting sexual health promotion content and service delivery targeting bisexual men in Laos, as discussed in Chapter 7, is the importance of comprehensive sexual health initiatives incorporating both HIV and STI control. Sexual risk behaviours such as inconsistent condom use, multiple sex partners, and consuming alcohol before sex were commonly reported by bisexual men [318, 414, 416]. Although these behaviours pose shared risk for HIV and other STIs, current health and prevention services in Laos largely focus on HIV [416]. This may be in part due to the predominance of vertical funding mechanisms, such as the Global Fund, which accounts for the highest proportion of AIDS-related funding in Laos [136, 181]. The separation of HIV from other STI services diverts resources and requires multiple instances of healthcare seeking by clients [527, 528]. A review of the available evidence in Chapter 1 demonstrated that the prevalence of chlamydia and gonorrhoea in MSM, female sex workers and kathoey is very high in Laos, and while disaggregated data is not available for bisexual men, is likely to also be high in this group [164, 165, 170]. Notwithstanding the specific morbidity associated with STIs, they also increase the transmission of HIV [60]. These data collectively emphasise the relevance of both HIV and STI programs for bisexual men in Laos. Integrating programs facilitates comprehensive services, reduces loss to follow up, is more acceptable to bisexual men, and is a more effective use of resources.

In addition, this research highlights a need for auxiliary psychosocial, mental health and substance use support services for bisexual men. These need to be sensitive to the needs of young bisexual men and could be integrated into existing sexual health services. Multidisciplinary services will provide more comprehensive care and address underlying vulnerabilities for HIV and overlapping risk behaviours.

General health-checks

Although many behaviourally bisexual men in the qualitative study insinuated that they would only access sexual healthcare if they had symptoms, others referred to having undergone general health checks. Further detail on what is entailed in a 'general health check' is required, but this suggests amenability to health check-ups among some men, an attitude which could be transferable to regular, asymptomatic sexual health checks. In Thailand, for example, the Asia Pacific Coalition on Male Sexual Health (APCOM) has launched a new event as part of its TestBKK campaign using a free health check-up package as an incentive, offered alongside HIV testing and sexual healthcare, to appeal to the increasing interest in good health, fitness and appearance among young MSM in Thailand [445]. The feasibility and acceptability of running similar campaigns in Laos should be explored. Integrating HIV and sexual healthcare into routine care may also help to normalise sexual health.

8.2.4 Capacity to address identified needs

Social-ecological models of health (section 1.5.1) emphasise that structural, institutional and social (community) factors are major influences on health and mediate sexual risk behaviours [260]. It is important to examine these broader domains of influence in order to inform interventions and policy change which promote a supportive environment for behaviour change, as indicated in integrated models of health promotion [262]. Informed by the qualitative research, structural and institutional factors affecting the local capacity to address identified needs were recognised and corroborated through local reports; in particular, the capacity to implement STI screening, mental health services, TAP and policy considerations. Addressing these factors will improve the efficiency and effectiveness of HIV interventions.

STI screening

In Chapter 7 the need for STI screening among people with high-risk behaviour, such as behaviourally bisexual men, is established. Regular screening is the only way of detecting asymptomatic infection and thus reducing the risk of complications and ongoing transmission of infection. However, the current capacity for implementing STI screening in Laos is limited. Most hospitals and clinics rely on limited microscopy and culture-based testing for chlamydia and gonorrhoea and predominantly rely on clinical presentation for diagnosis. Nucleic acid amplification testing (NAAT) is the preferred means for detecting asymptomatic infection with gonorrhoea and chlamydia because it has higher sensitivity and specificity and does not reply on purulent discharge or invasive procedures (it uses first-catch urine opposed to urethral swab for urethral testing) [192, 529]. However, the cost of NAAT testing is considerably higher than for microscopy and culture and requires more advanced equipment and training [530]. Only the reference laboratory in Vientiane has the facilities for NAAT, thus asymptomatic screening for chlamydia and gonorrhoea is not a viable option at present. At a

minimum, based on current capacity, hospitals and clinics in Laos could routinely offer syphilis screening. Syphilis is diagnosed serologically and the test is both acceptable and widely available [192].

With the exception of microscopy, all of the tests described above have considerable lag time between specimen collection and diagnosis, which increases loss to follow up and reduces access to treatment. The requirement for two visits is likely to amplify the barriers to accessing sexual healthcare. The advent of reliable point-of-care (POC) testing for STIs has the potential to greatly improve STI diagnosis and treatment in settings such as Laos by providing rapid diagnosis with minimal training, thus increasing the acceptability and feasibility of routine screening [531, 532]. Mathematical modelling in other settings has suggested that the gains in screening coverage afforded through POC testing could substantially reduce the prevalence of chlamydia and gonorrhoea [533]. While there have been advances in the development of POC testing technology for STIs, gonorrhoea and chlamydia rapid tests are not yet widely available and suffer from low sensitivity and specificity [534]. Syphilis POC tests are commercially available, but these currently rely on detection of treponemal antibodies and are thus unable to differentiate active infection, which can lead to overtreatment [535].

Another issue relating to STI screening is the cost of testing, which is currently an out-of-pocket expense for clients in Laos. This cost already reduces access, and diversifying testing technologies is likely to increase costs; the exception is POC diagnostics [531, 532]. In the interim, other strategies to reduce client costs are needed.

At the community level, social marketing campaigns to normalise sexual health and reduce sexual stigma may improve the uptake of HIV and STI testing [72].

Antiretroviral therapy

Section 8.1.3, informed by Chapter 7, also established the importance of facilitating regular HIV testing in bisexual men in Laos in order to promote early diagnosis of infection. The benefits of this approach are firstly, that men who know their positive status are more likely to modify their behaviour [536], and secondly, that testing and early diagnosis are a gateway to TAP [495]. The 'test and treat' model requires that individuals diagnosed with HIV be administered ART immediately, regardless of clinical stage and CD4 T-cell count, in order to maximise the population benefits of TAP [24, 209] and improve individual health outcomes [11]. However, in resource-limited settings treatment coverage is often suboptimal and these changes in treatment guidelines place extra stress on financial, structural and technical capacity [209]. In Laos ART coverage was reported to be 58% among adults and children living with HIV in 2013 [158]. Lao guidelines currently support initiating treatment at ≤350 cells/μL, but in order to promote optimal public health benefits, guidelines should reflect the current WHO recommendations for ≤500 cells/μL[208]. The capacity of the health system and drug procurement to cope with these changes, including diagnostic capabilities and availability of second- and third-line regimens, will further limit the implementation of recommendations for early initiation of ART [24]. For example, the Lao government is dependent on the Global Fund for procurement and supply of ART, and stock-outs sometimes occur [158]. National policy for HIV treatment and supply chains need to be reviewed alongside recommendations for periodic HIV testing.

Mental health capacity

Section 8.1.3 established mental health as a target for health promotion in bisexual men. In Laos there is currently little offered in the way of counselling and mental health support in mainstream or specialised services for MSM [537, 538]. The lack of established services and expertise limits ability to consider the mental health needs of bisexual men. Opportunities to develop local capacity in assessing mental health needs and delivering mental health programs should be addressed.

Policy considerations

The criminalisation of homosexuality and sex work can impair access to HIV prevention services due to police harassment and fear of persecution [74], but policy can contextualise risk and access in other ways. As discussed in section 1.3.5, in Laos, male-to-male sex is not criminalised, but there are still remnants of a repressive legal environment. Firstly, no laws specifically protect against discrimination on the grounds of sexuality, which can reinforce discriminatory attitudes institutionally as well as societally [75], and stigma and discrimination exist in healthcare, employment and education [539]. Secondly, key experts suggested that there are restrictions on publishing messages and images relating to male-to-male sex, which limits access to relevant information, particularly among heterosexual-identifying bisexual men [75, 416]. For example, in order to ensure that health promotion enacted through college dormitories, school-based sex education, or bars and nightclubs includes information relevant to bisexual men, information specific to male-to-male sex needs to be available. Thirdly, among some men, the lack of legal recognition of same-sex relationships in Laos contributes to societal pressures to marry and maintain concurrent sexual relationships with women. Finally, civil society has formerly been barred in Laos, and while technically allowed now, there are no civil networks and representing bodies for MSM in Laos. All representation occurs within the context of HIV (e.g. MSM representation on the Global Fund Country Coordinating Mechanism), perpetuating stigmatisation of MSM through their public portrayal as vectors of disease. Networks to represent the social and political interests of MSM are needed to advocate for the rights and representation of sexually and gender diverse populations in areas other than health. Anti-discrimination and other supportive policies are needed to foster an enabling environment for HIV prevention in Laos [72].

8.3 Limitations and strengths of the research

This research has several limitations. Most important is the lack of biological data, which makes it difficult to draw absolute conclusions about the level of HIV and STI risk in bisexual men in Laos. Further, the most recent HIV estimates among MSM are outdated (2007 from Vientiane [48] and 2009 from Luang Prabang [165]), and no STI prevalence data for MSM in Vientiane are currently available. Improved surveillance and routine monitoring is needed to understand the burden of HIV and STIs among behaviourally bisexual men and evaluate the impact of interventions.

The sexual networking study includes a small sample of bisexual men (n<100) with limited power to detect differences in subgroups. The anticipated sample size related to the overall sexual network (n=298) whereas this thesis focuses on a sub-sample of participants (n=88). Additionally, this study

was based on a non-probability sampling method that might not allow generalisation to the broader population of bisexual men in Vientiane. Nevertheless, steps were taken to improve the representativeness of the sample. The selection of the initial seeds was informed by a mapping exercise, and seeds were purposively selected to include men with varying self-identity, age, education, sexual attraction and attending different venues. In order to limit the influence of the initial seeds on the final sample, restrictive snowballing was used, whereby each participant could only nominate up to five sexual partners. Despite these efforts, the resulting sample is skewed towards young and well-educated behaviourally bisexual men, and results might not reflect the experience of older, married or less educated bisexual men. However, there are no reliable population descriptors for comparison with the sample.

Convenience and purposive sampling were used in the follow-up qualitative study, but by the nature of qualitative research, there was no intention to recruit a representative sample. The aim was to capture a breadth of experience, beliefs and attitudes among bisexual men. The settings for recruitment were based on the prior sexual networking study and focused on dormitories, bars and nightclubs, being places where bisexual men commonly live and meet their sex partners. However, previous studies have demonstrated that men recruited from bars and nightclubs have higher risk behaviour than men recruited from community venues, and the views of bisexual men who do not regularly attend these venues may not be adequately represented [368, 369].

Both studies were based on self-reported behavioural data and are subject to social desirability and recall bias. The long recall period used in the sexual networking study (12 months) may have affected recall of number of sex partners and condom use, and participants may have under-reported sensitive behaviours in order be seen more favourably in light of social norms. However, the use of computer-assisted interviewing, which was employed in the sexual networking study, has been found to reduce bias in self-reported data [354]. In the qualitative study all researchers involved in recruitment, interviewing and note-taking were Lao MSM peers. This helped to develop trust and rapport between researchers and participants and encouraged more natural dialogue and disclosure of behaviour. The assessment of gender in the sexual networking study was not best practice for measuring transgender identity, which recommends two questions to define biological sex at birth and current gender identity [111, 540]. Although we have addressed alcohol use and psychological issues, measurement of these constructs were not based off validated instruments.

Despite these limitations, this research in Laos adds substantially to the small body of research in Asia focusing on men with bisexual behaviour. Although many studies in Asia report that a large proportion of MSM are married or have sex with women, outside of China, very few studies focus on this subgroup. Numerous reports also suggest that behaviourally bisexual men or non-gay-identifying MSM have lower access to HIV prevention services than self-identifying men with homosexual behaviour. Consequently, research into the behaviour, risk and needs of bisexual men is needed to inform targeted initiatives that are better able to meet the needs of this subgroup, and these studies help to build upon this research base. Both the quantitative and qualitative studies incorporated in this thesis afforded access to a population that is frequently branded as 'hidden' [42] by using a form of enhanced snowball sampling in the quantitative study, venue-based sampling in the qualitative study,

and peer researchers. Although the sexual networking study and qualitative study were conducted at different time points and with different samples of bisexual men, the results are consistent, supporting the reliability of the findings. The combination of quantitative and qualitative data provides a better understanding of the context and breadth of the issues than one study alone could achieve.

8.4 Recommendations for future work

A major research priority identified through this work is the need for a prevalence survey of HIV and STIs among behaviourally bisexual men. There is no data on syphilis in MSM in Laos, and data on HIV is outdated. Biological data is needed to truly substantiate risk, assess predictors of risk and evaluate future interventions. Data on the prevalence of asymptomatic STIs in bisexual and other MSM would help to inform screening guidelines in Laos. Currently IBBSs are conducted ad hoc; periodic surveys will provide more consistent and useful data. As a matter of course, future surveillance and behavioural surveys in Laos should differentiate between subgroups of MSM and between MSM and transgender people. Improved estimates of population size are also needed to aid decision-making and planning.

The follow-up qualitative study included narrative reports of mental health issues and low testing rates among bisexual men. In order to understand the size and scope of these issues, future quantitative surveys should investigate mental health, psychosocial issues and testing history. As previously discussed, more detailed data on the prevalence of harmful alcohol consumption and influence on sexual-risk taking in bisexual men is also needed. To provide a more nuanced and comparable picture of alcohol and psychological issues affecting this population, validated instruments such as AUDIT-C [541, 542] and Kessler Psychological Distress Scales [543] should be used in future surveys. In addition, targeted research is needed to learn more about older and less educated bisexual men.

Potential applications for the results of this research to HIV prevention and sexual health promotion have been identified. Further formative research is needed to inform the development of these interventions, and pilot projects are recommended to assess the effectiveness of interventions. Current peer education programs in Laos have not been evaluated, and there is little strategic use of routine data [505]. Comprehensive evaluations of current peer education programs are needed to assess their effectiveness and identify areas for improvement.

8.5 Conclusion

This research has identified that men with bisexual behaviour are an important subgroup of MSM both in Laos and more broadly in Asia. It adds to a paucity of research focusing on bisexual men in South-East Asia and demonstrates the ongoing importance of research and interventions targeting this population. Bisexual men in Laos commonly identify as being straight, but this does not necessarily predict their sexual behaviour. Bisexual men report high-risk behaviours for both HIV and STIs, but despite this, many do not access testing or sexual healthcare. Straight-identifying bisexual men may have lower access to HIV prevention services than other bisexual men in Laos, and targeted efforts are

needed to engage this group in prevention interventions and sexual health services. Bisexual men will benefit from revised health promotion materials, expanded delivery through both physical and virtual settings, and structural changes to healthcare services. A renewed focus on STIs as part of a more comprehensive approach to sexual health in Laos – one that employs the insights gained from this research – will benefit both individuals and population health and has the potential to reduce the burden of STIs and halt the spread of HIV in Laos.

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Appendix A: Relevant peer-reviewed papers published during candidature

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IDENTIFYING RISK: A COMPARISON OF RISK BETWEEN HETEROSEXUAL-IDENTIFYING BISEXUAL MEN AND OTHER BISEXUAL MEN IN VIENTIANE, LAOS

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Men who have sex with men are a priority population for HIV control in Laos, but encompass men diverse in sexual orientation, gender identification, and behavior. Behaviorally bisexual men and their sexual partners were recruited in Vientiane, Laos, in 2010 using modified snowball sampling. *Heterosexual-identifying bisexual men* identified as exclusively/predominantly heterosexual and *other bisexual men* identified as bisexual or predominantly/exclusively homosexual. Sixty (68%) heterosexual-identifying and 38 (32%) other bisexual men were recruited; the median number of sex partners in the past year was eight and seven, respectively. Consistent condom use was low with regular (7%) and casual (35%) partners and did not differ by identity. More heterosexual-identifying (53%) than other bisexual (29%) men reported weekly alcohol consumption. Twelve (20%) heterosexual-identifying and 15 (54%) other bisexual men correctly answered all HIV-knowledge questions. High-risk behaviors for STI and HIV transmission were common. Targeted HIV prevention initiatives are needed, particularly to reach heterosexual-identifying bisexual men.

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Men who have sex with men in Lao People's Democratic Republic (herein referred to as Laos) encompass numerous subgroups, incorporating individuals with diverse sexual identities, gender roles, and sexual practices (National Committee for the Control of AIDS, 2010). Bisexual behavior among men is common; in a study of young men, 8% reported sex with at least one man and one women in the past 6 months (Toole et al., 2006), and in a study of men who have sex with men, 39% also reported sex with a woman in the previous 3 months (Sheridan et al., 2009). These studies noted that it is common for men with male partners to identify as straight or heterosexual (Sheridan et al., 2009; Toole et al., 2006).

Although the prevalence of HIV in Laos is relatively low (0.2%) in the general population (UNAIDS, 2010), HIV prevalence among men who have sex with men is considerably higher. It was estimated to be 5.6% among men who have sex with men in Vientiane, the capital of Laos, in 2007 (Sheridan et al., 2009), and there is concern that the prevalence will continue to increase. The Asian Epidemic Model projected that male-to-male sex will account for an increasing proportion of new HIV infections in the Asian region—up to 50% by 2020 (Commission on AIDS in Asia, 2008).

Current HIV prevention efforts in Laos targeting men who have sex with men are primarily aimed at other male-to-female transgender women (commonly known as *kathoey teng ying* or *kathoey phom yao* in Laos and herein referred to as kathoey) or their sexual partners, but these efforts are unlikely to adequately engage men who have sex with men but who do not identify as homosexual, bisexual, or kathoey or their equivalents (Centre for HIV/AIDS/STI [CHAS], 2012; Longfield, Panyanouvong, Chen, & Kays, 2011; Lyttleton, 2008; Thomas et al., 2009; van Gemert et al., 2013; World Health Organization Regional Office for South-East Asia, 2010). An improved understanding of the interplay among self-identity, behavior, and sexual networking among men who have sex with both men and women will assist public health practitioners in providing tailored sexual health promotion and HIV prevention services for these men and their partners. We describe demographic and sexual behavior characteristics among a population of male participants who report bisexual behavior and compare men according to sexual identity in order to assess whether difference in risk levels can be explained by sexual identity.

METHODS

STUDY DESIGN

A retrospective cross-sectional behavioral survey was conducted with people linked via sexual contact in Vientiane, the capital of the Laos, between June and October 2010.

RECRUITMENT AND STUDY POPULATION

Recruitment methods have been described previously (van Gemert et al., 2013). Briefly, behaviorally bisexual men and their sexual networks were recruited in Vientiane via enhanced snowball sampling. Recruitment began with 10 behaviorally bisexual men ("seeds"), who referred up to five of their recent sex partners, who in turn nominated up to five of their own sex partners for two to three waves of recruitment. Participants were required to be age 18 years and older and to have engaged in anal, vaginal, or oral sex in the previous 12 months.

This analysis is limited to male participants who reported male and/or kathoey and female sex partners in their lifetime (behaviorally bisexual men). For the purpose of brevity, herein they will be referred to as bisexual men.

DATA COLLECTION

Trained field researchers recruited participants and obtained informed consent. Participants self-completed a sexual behavioral questionnaire in Lao or English using a handheld computer programmed with Microsoft Visual Studio. Questionnaires took approximately 30 minutes to complete, and participants were reimbursed approximately $US2.50.

Information on demographics, sexual behavior, alcohol and drug use, and HIV knowledge was collected, including lifetime and past-year sexual contact with males, females, and kathoey and sexual contact with regular, casual, paid, paying, and foreign partners.

MEASUREMENT

Sexual identity was assessed using the Kinsey Scale, a 7-point scale of sexual orientation (Sell, 1997). Behaviorally bisexual men were classified as *heterosexual-identifying bisexual* if they reported self-identifying as exclusively or predominantly heterosexual (Kinsey 0–2) and *other bisexual* if they reported self-identifying as bisexual, predominantly, or exclusively homosexual (Kinsey 3–6).

Sex partner refers to an anal or vaginal sex partner (excluding oral sex partners) from the previous 12 months. *Number of sex partners in previous 12 months* (total and stratified by partner gender) was derived from the sum of regular, casual, paying, paid, and foreign sex partners in the previous 12 months. A *paying sex partner* is someone who gave money, gifts, or favors to the respondent in exchange for sex (i.e., respondent sold sex). A *paid sex partner* is someone to whom the respondent gave money, gifts, or favors in exchange for sex (i.e., respondent bought sex). Median numbers of sex partners were calculated only among men reporting at least one of the given partner gender or type. *Consistent condom use* (CCU) was defined as reporting always using a condom during anal and vaginal sex in the previous 12 months. Sex position was based on self-reported usual sex position with given partner gender and type (regular, casual, etc.), and grouped by partner gender. *Higher education* was defined as reporting education beyond upper secondary school.

Responses to eight HIV knowledge questions were recategorized as correct or incorrect (including "don't know"), and the percent of those answering all questions correctly was calculated.

ANALYSIS

Data were analyzed using Stata (Version 11, Stata Corp., College Station, TX, USA). Demographic characteristics and sexual behavior were compared between heterosexual-identifying and other bisexual men using χ^2-test of proportions or Kruskal-Wallis equality-of-populations rank test. Associations between CCU and demographic characteristics, sexual identity, HIV knowledge, and frequency of alcohol consumption among all bisexual men were explored using chi-square tests, with all analyses to significance level $p < 0.05$.

ETHICS

Ethical approval was obtained from the Alfred Hospital Ethics Committee, the ethical review committees of the Australian National University and the University

TABLE 1. Demographic Comparison of Heterosexual-Identifying Bisexual and Other Bisexual Men

	Heterosexual-identifying bisexual men		Other bisexual men		*p* value
	n	%	*n*	%	
Number of participants	60		28		
Demographic characteristics					
Age, median (IQR)	22	(20–24)	23	(20–25)	0.14
Higher education[1]	44	73	22	79	0.60
Currently studying	42	70	13	46	**0.03**
Currently employed	26	43	19	68	**0.03**
Single (never married)	58	97	26	93	0.42
Living arrangement					**< 0.01**
Live with parents	15	25	15	54	
Live with a relative	4	7	9	32	
Live with partner	3	5	0	0	
Share room or dormitory	33	55	4	14	
Other	5	8	0	0	
Originally from Vientiane	21	35	18	64	**0.01**

[1]Defined as reporting education beyond upper secondary school.

of Health Sciences (Laos), and the National Ethics Committee for Health Research of the Lao PDR.

RESULTS

CLASSIFICATION OF SEXUAL BEHAVIOR

In total, 298 individuals were recruited and completed the behavioral survey. Of 189 men participating, 181 (96%) could be classified as behaviorally bisexual, homosexual, or heterosexual based on lifetime sex partners. Of these men, 88 (49%) were classified as bisexual and are included in this analysis.

SEXUAL IDENTITY

Among men reporting bisexual behavior during their lifetime, 16 (18%) identified as exclusively heterosexual, 34 (39%) identified as predominantly heterosexual but incidentally homosexual, 10 (11%) identified as predominantly heterosexual but more than incidentally homosexual, seven (8%) identified as equally heterosexual and homosexual, 11 (13%) identified as predominantly homosexual but more than incidentally homosexual, six (7%) identified as predominantly homosexual but less than incidentally heterosexual, and four (5%) identified as exclusively homosexual. When grouped, 60 (68%) bisexual men were classified as heterosexual-identifying bisexual and 28 (32%) were classified as other bisexual men.

DEMOGRAPHICS

The median age of heterosexual-identifying and other bisexual men was 22 and 23 years, respectively (p = .14) (Table 1). More heterosexual-identifying bisexual (70%) than other bisexual (46%) men were currently studying (p = 0.03) and fewer heterosexual-identifying bisexual (43%) than other bisexual (68%) men were currently employed (p = .03). The majority of heterosexual-identifying bisexual men

TABLE 2. Sexual Behavior in Previous 12 Months by Partner Gender Among Heterosexual-Identifying Bisexual and Other Bisexual Men

	Heterosexual-identifying bisexual men		Other bisexual men		*p* value
	n	%	*n*	%	
Total	60		28		
Any male sex partners[1]	28	47	26	93	**< 0.01**
Median number of male partners (IQR)	5	(2–10)	5.5	(5–13)	0.31
CCU with male partners[2]	5	18	5	19	0.90
Any kathoey sex partners[1]	40	67	9	32	**< 0.01**
Median number of kathoey partners (IQR)	3	(2–10)	3	(2–6)	0.91
CCU with kathoey partners[2]	11	28	4	44	0.32
Any female sex partners[1,3]	58	98	20	91	0.12
Median number of female partners (IQR)	5	(3–11.5)	2	(2–3)	**< 0.01**
CCU with female partners[2]	11	19	5	25	0.56
Median number of total sex partners[1] (IQR)	8	(4–24)	6.5	(5–10)	0.45

[1]Sex partners refer to anal or vaginal sex partners reported in the previous 12 months (excludes oral sex partners). [2]CCU: consistent condom use, defined as reporting always using condoms during anal and vaginal sex in the previous 12 months. [3]Percentage reporting any female partners includes missing responses in denominator given high proportion of missing data on female partners; missing in one (2%) heterosexual-identifying and six (21%) other bisexual men.

were currently sharing a room or dormitory (55%) followed by living with parents (25%), while the majority of other bisexual men were living with parents (54%) or relatives (32%), following by sharing a room or dormitory (14%, $p < .01$). A higher proportion of other bisexual men (64%) than heterosexual-identifying bisexual men (35%) were originally from Vientiane ($p = .01$).

SEXUAL INITIATION

The median age of first anal or vaginal sex was 17 (interquartile range [IQR] 15–18) years for heterosexual-identifying bisexual men and 18 (IQR 17–19) years for other bisexual men ($p = .01$). Among heterosexual-identifying bisexual men, 49 (82%) reported first anal or vaginal sex with a female, three (5%) with a male, and eight (13%) with a kathoey. Among other bisexual men, 14 (50%) reported first sex with a female, 11 (39%) with a male, and three (11%) with a kathoey.

PAST-YEAR SEXUAL BEHAVIOR

Based on the previous 12 months, 28 (47%) heterosexual-identifying bisexual men and 26 (93%) other bisexual men reported any male sex partners ($p < .01$); 40 (67%) and 9 (32%), respectively, reported any kathoey sex partners; and 58 (98%) and 20 (91%), respectively, reported any female sex partners ($p = .01$) (note: one heterosexual-identifying and six other bisexual men had missing data on female partners and are included in the denominator for female partners) (Table 2). Overall, 46 (77%) heterosexual-identifying bisexual men and 20 (71%) other bisexual men reported both male and kathoey and female sex partners in the previous 12 months. Of the 12 heterosexual-identifying bisexual men reporting only female anal and vaginal sex partners in the past year, 11 (92%) reported male or kathoey oral sex partners in the past year.

Heterosexual-identifying bisexual and other bisexual men reported a similar number of male (median of 5 and 5.5, respectively) and kathoey (median: 3) partners in the previous 12 months, but heterosexual-identifying bisexual men reported

TABLE 3. Sexual Behavior in Previous 12 Months by Partner Type Among Heterosexual-Identifying Bisexual and Other Bisexual Men

	Heterosexual-identifying bisexual men		Other bisexual men		*p* value
	n	%	*n*	%	
Total	60		28		
Any regular sex partner[1]	43	72	16	57	0.18
Median number of regular partners (IQR)	6	(2–14)	5	(3–9)	0.59
CCU with regular partners[4]	2	5	2	13	0.29
Any casual sex partner[1]	40	67	20	74	0.49
Median number of casual partners (IQR)	6	(3–10)	7	(5–10)	0.54
CCU with casual partners[4]	14	35	7	35	1.00
Any paying sex partner[1,2]	19	32	7	25	0.52
Median number of paying partners (IQR)	5	(3–9)	8	(5–15)	0.45
CCU with paying partners[4]	7	37	4	57	0.35
Any paid sex partner[1,3]	13	22	4	14	0.41
Median number of paid partners (IQR)	3.5	(1–5)	5	(2–15)	0.39
CCU with paid partners[4]	7	54	1	25	0.31
Any foreign sex partner[1]	5	8	5	18	0.19
Median number of foreign partners (IQR)	2	(1–3)	14	(2–27)	0.26
CCU with foreign partners[4]	3	60	4	80	0.49

[1]Sex partners refer to anal or vaginal sex partners reported in the previous 12 months (excludes oral sex partners). [2]A paying sex partner is someone who gave money, gifts, or favors to the respondent in exchange for sex. [3]A paid sex partner is someone to whom to respondent gave money, gifts, or favors in exchange for sex. [4]CCU: consistent condom use, defined as reporting always using a condom with all sex partner(s) in the previous 12 months. IQR: interquartile range.

a higher number of female sex partners (median: five) than other bisexual men (median: two; $p < .01$) (Table 2). Although not reaching statistical significance, heterosexual-identifying bisexual men reported a higher number of sex partners overall (median: eight partners) than other bisexual men (median: 6.5, $p = .45$). For all bisexual men, reported CCU was low with male (19%), kathoey (31%), and female partners (21%), and no difference was detected in CCU by identity (Table 2).

Forty-three (72%) heterosexual-identifying bisexual men and 16 (57%) other bisexual men reported a regular sex partner in the previous 12 months ($p = .18$). A higher proportion of heterosexual-identifying bisexual than other bisexual men reported regular female (91% vs. 48%, $p < .01$) and regular kathoey (65% vs. 33%, $p = .02$) sex partners, while a higher proportion of other bisexual men reported regular male sex partners (94% vs. 44%, $p < .01$). Besides regular partners, bisexual men also reported casual (60%), paying (30%), paid (19%), and foreign (11%) sex partners in the previous 12 months; report of non-regular partners was similar between heterosexual-identifying and other bisexual men (Table 3). For both heterosexual-identifying bisexual and other bisexual men, reported CCU was lowest with regular partners (5% and 13%. respectively, $p = .29$) and was relatively higher for casual partners (each 35%), paying partners (37% and 57%, respectively, $p = .35$), paid partners (54% and 25%, respectively, $p = .31$), and foreign sex partners (60% and 80%, respectively, $p = .49$).

SEX POSITION

Among heterosexual-identifying bisexual and other bisexual men reporting any male sex partners in the previous 12 months, 21 (75%) and four (15%), respectively,

TABLE 4. Associations With CCU in All Bisexual Men (n = 88)

		Total	CCU[1]		
		n	*n*	%	*p* value
Sexual identity	Heterosexual-identifying bisexual	60	7	12	
	Other bisexual	28	5	18	
					0.43
Originally from Vientiane	Yes	39	5	13	
	No	49	7	14	
					0.84
Higher education[2]	Yes	66	11	17	
	No	22	1	5	
					0.15
Currently employed	Yes	45	6	13	
	No	43	6	14	
					0.93
Frequency of alcohol consumption	Less than weekly[3]	48	10	21	
	Weekly or more	40	2	5	
					0.03
Age at first sex[4]	< 18 years	44	5	11	
	≥ 18 years	42	7	17	
					0.48
All HIV knowledge questions correct	Yes	27	7	26	
	No	61	5	8	
					0.03

[1]Consistent condom use, defined as reporting always using a condom with all sex partner(s) in the previous 12 months. [2]Defined as any education beyond upper secondary school. [3]Includes those who report never consuming alcohol in the previous 12 months. [4]Age at first anal or vaginal sex. Significant *p* values ($p < 0.05$) shown in boldface.

reported usually having insertive sex; two (7%) and six (23%), respectively, reported usually having receptive sex; and five (18%) and 16 (62%), respectively, reported practicing role versatility (i.e., versatility in being the insertive or receptive partner during sexual encounters during the previous 12 months) with male partners ($p < .01$).

Among heterosexual-identifying bisexual and other bisexual men reporting any kathoey sex partners in the previous 12 months, 37 (93%) and six (67%), respectively, reported usually having insertive sex; one (3%) and zero, respectively, reported usually having receptive sex; and two (5%) and three (33%), respectively, reported practicing role versatility with kathoey partners ($p = .04$).

Among 78 men reporting any female sex partners in the previous 12 months, all reported vaginal sex and 36 (62%) heterosexual-identifying bisexual and nine (45%) other bisexual men also reported any anal sex with female partners ($p = .03$). Both heterosexual-identifying bisexual and other bisexual men reported slightly lower CCU during anal sex with females (both 11%) than during vaginal sex (19% and 30%, respectively, both $p^3 \geq .27$).

ALCOHOL AND OTHER DRUGS

Thirty-two (53%) heterosexual-identifying bisexual men and eight (29%) other bisexual men reported drinking alcohol weekly or more ($p = .03$). More heterosex-

ual-identifying bisexual than other bisexual men reported always or almost always drinking alcohol before having sex with female (45% vs. 10%, $p = .01$), male (54% vs. 23%, $p = .02$), and kathoey (65% vs. 33%, $p = .08$) sex partners.

Seven (12%) heterosexual-identifying bisexual men and one (4%) other bisexual men reported using illicit drugs in the previous 12 months ($p = .22$).

Reported CCU with all sex partners was lower among bisexual men reporting consuming alcohol weekly or more (5%) compared to those reporting drinking less often than weekly (21%, $p = .03$) (Table 4).

HIV KNOWLEDGE

The median number of HIV knowledge questions answered correctly (out of eight) was seven among heterosexual-identifying bisexual men and eight among other bisexual men ($p < .01$). For example, among heterosexual-identifying bisexual and other bisexual men, 92% and 93%, respectively, knew that using condoms during vaginal sex can reduce risk of HIV transmission ($p = .85$); 83% and 100%, respectively, knew that using condoms during anal sex can reduce risk of HIV transmission ($p = .02$); 73% and 89%, respectively, knew that a healthy-looking person can have HIV ($p = .09$); and 72% and 79%, respectively, knew that having only one faithful, uninfected partner can reduce the risk of HIV transmission ($p = .49$).

Overall, 12 (20%) heterosexual-identifying bisexual men and 15 (54%) other bisexual men answered all questions correctly ($p < .01$). Among all bisexual men, those answering all HIV knowledge questions correctly reported higher CCU (26%) with all sex partners compared to those who did not answer all questions correctly (8%) ($p = .03$, Table 4).

DISCUSSION

This study examined behavior in bisexual men in Vientiane, Laos, and compared behavior and risk in heterosexual-identifying bisexual men and other bisexual men. High partner numbers and low condom use were commonly reported, irrespective of identity, enhancing risk of acquisition and transmission of HIV and other STIs.

A key study finding was the low level of CCU reported by both heterosexual-identifying bisexual and other bisexual men. While we could not detect a significant difference in CCU by identity, there was a tendency toward lower CCU with kathoey and female partners among heterosexual-identifying bisexual men compared to other bisexual men. Although low across partner genders and types, CCU was lowest with regular partners. This is a common finding in many settings, given that regular partners are often indicative of emotional commitment, and thus condom use may be considered unnecessary due to perceived lower risk, or avoided due to perceived implication that condom use implies unfaithfulness and undermines trust (Toole et al., 2006; TREAT Asia, 2006). Notably, in our sample, half of bisexual men reported six or more regular partners in the past 12 months. High partner numbers could be indicative of either high turnover of partners or concurrent partnerships—both of which increase risk of HIV and STI transmission, particularly given low condom use. These findings support those reported from Vietnam (Bengtsson, Thorson, Thanh, Allebeck, & Popenoe, 2013) and emphasize the importance of extending HIV prevention efforts to men in relationships rather than focusing only on casual or transactional sex partners, who are more commonly the focus of HIV campaigns.

The gender profile of sexual partners differed between heterosexual-identifying bisexual and other bisexual men. First, other bisexual men were more likely to report male sex partners, while heterosexual-identifying bisexual men were more likely to report kathoey sex partners. Previous studies in Laos have reported that men may not consider having sex with kathoey (who appear and act as women) a threat to their masculinity (Lyttleton, 2008). Nonetheless, while men might not consider this to be homosexual behavior, it poses the same high risks of HIV and other STI transmission. Of note, heterosexual-identifying bisexual men reported substantially lower CCU with kathoey partners than did other bisexual men, although this is based on small numbers. Second, heterosexual-identifying bisexual men reported a significantly higher number of female partners than other bisexual men and were more likely to report a regular female partner. There is currently limited evidence of a bridging effect through bisexual men from high- to low-risk populations (Chow, Wilson, & Zhang, 2011, 2012; Kim et al., 2010; Mercer, Hart, Johnson, & Cassell, 2009; Phillips et al., 2010; Valleroy, MacKellar, Behel, & Secura, 2004). Nonetheless, given the low condom use and high number of partners reported by bisexual men as compared to behaviorally homosexual and heterosexual men (reported in van Gemert et al., 2013), there is potential for bisexual men to increase HIV and STI transmission within their diverse sexual networks, including transmission to female sexual partners. This effect may be enhanced in the context of high partner turnover, which was more evident in the heterosexual-identifying bisexual men.

Alcohol use is often linked to increased sexual risk behavior, particularly among men who have sex with men (Woolf & Maisto, 2009). Although we did not establish consumption quantity, heterosexual-identifying men reported consuming alcohol more frequently than other bisexual men and were more likely to report commonly consuming alcohol before sex. Furthermore, men reporting weekly alcohol use reported lower CCU with all partners compared to men drinking less frequently. It was not possible to determine whether this was due to alcohol-associated disinhibition or situational, given that socializing in Laos often occurs in drink-shops (casual restaurant/bar where beer is usually consumed) and bars, which are also common locations for men to meet sex partners (Lyttleton, 1999). Nonetheless, the potential role of alcohol highlights a need for health promotion targeting alcohol use and condom use through, for example, education or setting-based interventions. Further research is needed to explore this issue of interaction between where people socialize, consume alcohol, and engage in sexual activity.

Although HIV knowledge was generally high, heterosexual-identifying bisexual men reported lower knowledge than other bisexual men. In particular, they were less likely to recognize the benefits of condoms during anal sex, which may be indicative of lower access to education and prevention efforts aimed at men who have sex with men. This a likely a result of the historical nature of HIV prevention in Laos; early surveillance and prevention initiatives have focused on transactional sex and heterosexual transmission ("HIV Surveillance Survey," 2003; National Committee for the Control of AIDS, 2006); and mainstream education and prevention do not refer to anal sex and male-to-male sexuality, which are restricted to targeted campaigns only (Lyttleton, 2008; key informant SGD, personal communication, October 1, 2013). This finding supports the call for discussion on anal sex to be incorporated into HIV prevention education targeting all young people in Laos, rather than limited to initiatives specific to men who have sex with men, in order to reach more hidden groups of bisexual men (Sheridan et al., 2009). Men with incorrect HIV knowledge reported lower CCU than men who answered all questions correctly. This finding

substantiates the need for men to receive accurate information on HIV in order to convey the importance and benefits of CCU. Nevertheless, CCU was low even among men who answered all HIV knowledge questions correctly, suggesting that there are other influences on behavior besides knowledge of HIV transmission.

More heterosexual-identifying bisexual than other bisexual men reported only usually having insertive sex with both male and kathoey partners, while more other bisexual men reported versatile positioning. The more frequent report of insertive sex among heterosexual-identifying men supports the qualitative findings of this and previous studies, which frequently voice the preference of "full men" (who are generally considered straight or heterosexual in sexual orientation as opposed to behavior) for insertive sex with kathoey in order to maintain self-notions of masculinity (Johnston, 2012; Lyttleton, 2008), and also the preference of kathoeys for receptive sex to preserve self-notions of femininity (Lyttleton, 2008). Nonetheless, receptive anal sex was part of the usual practice of one fourth of heterosexual-identifying bisexual men and most other bisexual men. The observed role versatility may enhance the spread of HIV within the sexual network (Goodreau, Goicochea, & Sanchez, 2005; Tieu et al., 2013; van Druten, van Griensven, & Hendriks, 1992), given that receptive sex poses a higher probability of HIV transmission (Baggaley, White, & Boily, 2010; Jin et al., 2010). Hence, men with versatile positioning are more likely to become infected during receptive sex and then transmit HIV to their partners during unprotected insertive sex. The risk of HIV and STI transmission through unprotected receptive sex needs to be clearly communicated; however, it is important that pointing out the risk associated with receptive sex does not underplay the risk associated with insertive anal sex and feed the common misperception that insertive anal sex poses minimal or no risk (Beck, McNally, & Petrak, 2003).

Heterosexual-identifying bisexual men and other bisexual men differed in terms of age, living arrangements, and engagement in work and study. These differences are likely interrelated, but possible explanations might include that younger men may be more likely to experiment sexually and question their identity; that same-sex attraction or behavior is potentially stigmatized in the education or dormitory environment, inhibiting open disclosure of identity in these environments; or that men in dormitories are more motivated by economic relations than by sexuality and attraction (Lyttleton, 2008). Irrespective of reasoning, dormitories and higher education facilities may be useful settings for reaching bisexual men for preventive health initiatives, particularly heterosexual-identifying men who are more likely to be currently studying and living in a dormitory. Further qualitative inquiry is needed to better understand these influences and the acceptability of promoting HIV awareness, knowledge, and prevention in these environments.

There are a number of limitations to this study. First, participants were recruited through snowball sampling, a nonprobability sampling method, and the findings may not be representative of the broader population in Vientiane. Detection of differences by identity may be limited by the relatively small sample size. Nonetheless, the study design enabled access to a hard-to-reach group of behaviorally bisexual men. Second, the cross-sectional design precludes determination of causality. Third, risk behavior data were collected through self-report and thus reliability cannot be established; data may be subject to social desirability or recall bias. However, computer-assisted self-administered surveys, including personal digital assistants (PDAs) as used in this survey, have been found to increase accuracy of reporting and response rate compared to face-to-face interviewing (Langhaug, Sherr, & Cowan, 2010). Fourth, the derived number of total, male, female, and kathoey sex partners

may be overestimated, given that foreign partners may not be mutually exclusive of other partner types, but any overestimation is expected to be minimal. Finally, the Kinsey scale has not been validated in Lao, and heterosexuality and homosexuality are not innate concepts in Lao culture (Sheridan et al., 2009), with potential for misclassification of sexual orientation. However, the Kinsey scale allows identity to be assessed across a continuum and allows results to be compared across settings (Reddel et al., 2012); this would not have been possible if a system of discrete identity categories were devised specific to Lao culture.

CONCLUSION

In conclusion, our study confirms reports that bisexual men have diverse sexual identities, with a large proportion identifying as heterosexual. We identified widespread reports of multiple partners and inconsistent condom use, placing bisexual men and their sexual partners at increased risk of HIV and STI transmission. Targeted interventions are particularly needed to reach heterosexual-identifying bisexual men, who reported lower HIV knowledge, more risky alcohol consumption, and more female sex partners. Internationally there are minimal evaluated initiatives targeting heterosexual-identifying bisexual men, and further research is needed to determine how best to target and reach this population group. Initiatives should not neglect the importance of targeting regular partnerships, which may be as risky as casual and transactional sex encounters in this population.

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SETTING THE SCENE: LOCATIONS FOR MEETING SEX PARTNERS AMONG BEHAVIORALLY BISEXUAL MEN IN VIENTIANE, LAOS, AND OPPORTUNITIES FOR HEALTH PROMOTION

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Behaviorally bisexual men (BBM) in Vientiane, Laos report high-risk sexual behaviors. We explore settings for meeting sex partners and associated risk behaviors among BBM in Laos. BBM and their sexual partners were recruited in Vientiane Capital using modified snowball sampling (2010). Settings for usually meeting sex partners and associations with risk behaviors were assessed. Among 88 BBM, the most common settings for men meeting male, kathoey, and female sex partners were private residences (48%, 37%, 51%, respectively) and hospitality settings (39%, 31%, 40%, respectively). Hospitality settings were more commonly reported by heterosexual-identifying BBM, and private residences more commonly reported by bisexual/homosexual-identifying BBM. Inconsistent condom use was high across partners and settings. Meeting partners in hospitality settings was associated with reporting a high number of female sex partners and frequently drinking alcohol before sex. Our results suggest that targeted health promotion initiatives in bars, clubs, and beer-shops could reach a high proportion of high-risk bisexual men, particularly heterosexual-identifying BBM.

In Lao People's Democratic Republic (herein referred to as Laos), behaviorally bisexual men are an important sub-group of men who have sex with men. A substantial proportion of men who have sex with men also report sex with women (Rattiphone, Khanti, Morineau, & Phimphachanh, 2010; Sheridan et al., 2009), and many of these men identify as exclusively or predominantly heterosexual (Bowring et al., 2014). A recent study by our group showed that in Vientiane, the capital of Laos, behaviorally bisexual men interlink sexual networks of men who only have sex with men, kathoey (male-to-female transgender women), heterosexual men, and women (van Gemert et al., 2013). Further, behaviorally bisexual men report high risk behaviors for HIV and other sexually transmitted infections (STIs), including low rates of consistent condom use with their male, kathoey, and female sex partners, multiple sex partners in the past year, and sexual risk behavior associated with frequent alcohol consumption (Bowring et al., 2014). While HIV prevalence in Laos is low (0.2% in the general population; United Nations Program on HIV/AIDS, 2010), men who have sex with men are at increased risk of HIV infection and other sexually transmitted infections (STIs), with HIV prevalence estimated at 5.6% among men who have sex with men in Vientiane (Sheridan et al., 2009). There is concern that HIV prevention measures may not be reaching key sub-groups engaging in high-risk behaviors, including behaviorally bisexual men.

The settings where sex partners are met, including physical locations and virtual settings, and where sex encounters occur, may influence risk (Frye et al., 2006). Settings can be characterized by their physical, social, and cultural environment, which may interact and may influence behavior and resulting risk (Frye et al., 2006). For example, physical environment can dictate access to alcohol or availability of dark, concealed spaces; social environment defines social structures, memberships to a particular group such as a gay subculture, and the way that people interact and socialize in a given setting; and cultural environment influences through social and cultural norms, such as acceptance or stigmatization of sexual minorities. In some instances, the setting for meeting sex partners will overlap with where sex occurs while in other cases, sex will occur in a different location, either immediately or delayed until a later time or date.

Previous international studies of men who have sex with men, predominantly originating from the United States (U.S.) as well as China, demonstrate associations between settings for meeting sex partners (or alternatively, recruitment venues) and

alcohol consumption, the likelihood of disclosing HIV status, condom use, number of partners, and type of sex (Benotsch, Kalichman, & Cage, 2002; Binson et al., 2001; Chen, Yin, Jiang, & Wang, 2012; Grov & Crow, 2012; Grov, Hirshfield, Remien, Humberstone, & Chiasson, 2013; Grov, Parsons, & Bimbi, 2007; Hong et al., 2009; Horvath, Bowen, & Williams, 2006; Lee, Lam, Lee, & Wong, 2012; Pollock & Halkitis, 2009; Reisner et al., 2009; Thiede et al., 2009; Tsui & Lau, 2010; Xia et al., 2006). However, these associations are not consistently identified across studies or settings, and the generalizability to diverse international settings and communities is unclear (Bonell, Strange, Allen, & Barnett-Page, 2006). Further, most of these studies have been dominated by self-identifying gay men, and correlations to behaviorally bisexual men is uncertain. Behaviorally bisexual men may attend and interact with settings differently to other men who have sex with men, depending on their sexual identity, connectedness with similarly behaving men, and level of attraction to men, kathoey, and women.

In Laos, information obtained from qualitative research of behaviorally bisexual men suggests that condom use may be influenced by the location for meeting sex partners or where sex happens (Johnston, 2012). For example, men reported being more likely to use condoms with partners met in hospitality settings (e.g., nightclubs, bars) and sex-on-premises type venues (e.g., massage parlors, brothels), given sex partners met in these settings were perceived to be more promiscuous (Johnston, 2012). Behaviorally bisexual men commonly reported that they were less likely to use condoms when sex occurred in public settings such as parks or toilets, given sex was often rushed in these circumstances (Johnston, 2012).

If setting plays a role in influencing risk, it follows that certain settings may be useful forums for undertaking sexual health promotion and HIV prevention. Informed by information on where gay men meet sexual partners, successful sexual health promotion and education services have been undertaken internationally in bathhouses, commercial sex venues (Daskalakis et al., 2009; French, Power, & Mitchell, 2000; Lister et al., 2005; Taylor et al., 2005; Woods, Binson, Mayne, Gore, & Rebchook, 2001; Woods, Euren, Pollack, & Binson, 2010), and bars and clubs (Blank, Gallagher, Washburn, & Rogers, 2005; Kalichman, 2010; Kelly et al., 1997) incorporating condom distribution, health and prevention education, onsite HIV and STI testing, and peer-led initiatives.

In order to inform public health interventions to better target behaviorally bisexual men in Vientiane, this paper focuses on identifying the settings where these men meet their sex partners and exploring risk behaviors in the context of settings.

METHODS

STUDY DESIGN

A retrospective cross-sectional behavioral survey was conducted with people linked by sexual contact in Vientiane, the capital of Laos, between June and October 2010.

SAMPLING AND STUDY POPULATION

Recruitment methods have been described previously (Bowring et al., 2014; van Gemert et al., 2013). In brief, starting with ten male seeds reporting sex with men and women in the previous 12 months, behaviorally bisexual men and their sexual networks were recruited in Vientiane Capital by enhanced snowball sampling. Each

participant could nominate up to five of their sex partners for recruitment, for up to three waves of recruitment. Participants were required to be aged 18 years and above.

DATA COLLECTION

Trained field researchers recruited participants and obtained informed consent. Participants self-completed a sexual behavioral questionnaire in Lao language using a hand-held computer programmed with Microsoft Visual Studio; if required, field researchers were available to assist with electronic entry. Questionnaires took approximately 30 minutes to complete, and participants were reimbursed the equivalent of approximately U.S. $2.50.

Information on demographic and sexual behavior was collected, including lifetime and past year sexual contact with males, females, and male-to-female transgender women (commonly known as *kathoey teng ying* or *kathoey phom yao* in Laos and herein referred to as kathoey) and sexual contact with regular, casual, paid, paying, and foreign partners.

MEASUREMENT

Sexual behavior was categorized based on male participants' reporting of anal or vaginal sex during their lifetime: behaviorally homosexual (report sex with men and/or kathoey only), behaviorally heterosexual (report sex with females only) and behaviorally bisexual (report sex with women and men and/or kathoey). For the purpose of brevity, throughout the remainder of the paper behaviorally bisexual men will be referred to as bisexual men.

Sexual identity was categorized using the Kinsey Scale, a seven-point scale of sexual orientation (Sell, 1997). Bisexual men were classified as *heterosexual-identifying* if they reported being exclusively or predominantly heterosexual (Kinsey 0–2) and *bisexual/homosexual-identifying* if they reported being bisexual, predominantly homosexual, or exclusively homosexual (Kinsey 3–6).

Settings. Settings for meeting sex partners were assessed using multiple choice questions asking participants to identify the location where they usually met regular, casual, paid, paying, and foreign sex partners of male, female, and kathoey gender in the previous 12 months. For analysis, responses were collapsed by partner's gender and settings were grouped as: private residence (friend's house, unit rental, dormitory), hospitality settings (bar, club, pub, beer shop, restaurant, café), public space (park, football ground, movies, shops near factory), sex-on-premises (brothel, massage parlor, sauna, hotel) and other (internet, telephone, other unspecified). The resulting binary variables were defined as if usually meets male/female/kathoey partners in the specified setting. Setting variables are not mutually exclusive and a participant may report multiple settings in which they meet sex partners for a given partner gender. In Laos, dormitories are low-cost accommodations based at education institutions and available to students who have moved to a town or city for education purposes (Lyttleton, 2008). The category sex-on-premises type settings has been used because prostitution is illegal in Laos, and brothels, per se, are rare; transactional sex is frequently initiated from drink-shops, nightclubs and guesthouses (Center for HIV/AIDS/STI [CHAS], 2012; Lyttleton, 1999; Toole et al., 2006; United Nations Population Fund, 2008). We have categorized sex-on-premises type settings to reflect settings where sex is more likely to happen on premises and have

maintained a separate category for hospitality settings where transactional sex may also be initiated.

Sexual Behavior and Drinking. Sex partners refers to partners with whom the participant had anal or vaginal sex (excludes oral sex partners) in the previous 12 months. Inconsistent condom use was defined as reporting not always using a condom during anal and vaginal sex in the previous 12 months. High number of sex partners was defined as reporting more than the gender-specific median number of sex partners in the previous 12 months among participants reporting any sex partners of that gender. Frequently drinking alcohol before sex was defined as always, or almost always, consuming alcohol before sex with male, female, or kathoey partners in the previous 12 months.

ANALYSIS

Analyses were limited to bisexual males only. Seeds are included in the final analysis. Setting and risk were explored in two parts:

1. Prevalence of meeting male, kathoey, and female sex partners across settings was estimated and differences by sexual identity assessed using design corrected χ^2-tests of independence.
2. Stratifying by partner gender, differences in risk behaviors (inconsistent condom use, high number of sex partners, and frequently drinking alcohol before sex) of all bisexual men were compared across private residence, hospitality, public spaces, sex-on-premises type, and other settings.

Proportions presented are based on the number of participants responding to a question with missing data excluded. In all analyses, estimated standard errors took account of the seed clustering due to snowball sampling and significance assessed at the 5% level. In all comparative tests, *p*-values and adjusted χ^2 (transforms to an F-statistic) statistics were reported. Ninety-five percent confidence intervals (CI) were estimated for prevalence estimates.

Data were analyzed using Stata (Version 11, Stata Corp., College Station, TX, USA).

ETHICS

Ethical approval was obtained from the Alfred Hospital Ethics Committee, the Ethical Review Committee of the Australian National University, and the National Ethics Committee for Health Research of the Lao PDR.

RESULTS

PARTICIPANT DESCRIPTION

In total 298 individuals were recruited; 189 were males of whom eight were excluded due to incomplete data on gender of lifetime sex partners. Eighty-eight (49%) men were defined as bisexual based on lifetime sexual behavior. The median age of these men was 22 years, 66 (75%) had completed higher education, 55 (63%) were currently studying (93% studying at university, 7% studying at technical college), 45 (51%) were currently employed, four (5%) had ever been married, and 39 (44%) were originally from Vientiane Capital. The majority of bisexual men shared a room

TABLE 1. Demographic Characteristics of Bisexual Men

	Bisexual Men	
	n	%
Total	88	100
Age, median (IQR)	22	(20–24)
Completed higher education[a]	66	75.0
Currently studying	55	62.5
Currently employed	45	51.1
Ever been married	4	4.6
Have children	4	4.6
Originally from Vientiane	39	44.3
Living arrangement		
Share room or dormitory	37	42.1
Live with parents	30	34.1
Live with relative/s	13	14.8
Live with partner	3	3.4
Live alone	2	2.3
Other	3	3.4

[a]Higher education defined as any education beyond upper-secondary school.

or dormitory (42%) or lived with parents (34%) (Table 1). Of the 88 bisexual men, 60 (68%) were heterosexual-identifying and 28 (32%) were bisexual/homosexual-identifying.

SEXUAL BEHAVIOR IN THE PREVIOUS 12 MONTHS

Sixty-six (75%) of the 88 bisexual men reported bisexual behavior in the past year. Fifty-four (61%) reported having a male sex partner, 49 (56%) reported a kathoey sex partner, and 78 (96%) reported a female sex partner in the previous 12 months (Table 2). More heterosexual-identifying men (67%) than bisexual/homosexual-identifying men (32%) reported a kathoey sex partner, but this difference was not statistically significant ($p = 0.07$). Bisexual men who were heterosexual-identifying (47%) were less likely than those who were bisexual/homosexual-identifying (93%) to report a male sex partner in the past 12 months ($p < 0.01$; Table 2).

SETTINGS FOR MEETING SEX PARTNERS

The most common settings for meeting male sex partners were private residences (48%) and hospitality settings (39%), followed by sex-on-premises type settings (24%), other settings (13%), and public spaces (9%; Table 2). Of bisexual men, more heterosexual-identifying men (57%) than bisexual/homosexual-identifying men (19%) reported meeting male partners in hospitality settings ($p = 0.03$), while more bisexual/homosexual-identifying men (73%) than heterosexual-identifying men (25%) reported meeting male partners in private residences ($p = 0.03$; Table 2).

The most common settings for meeting kathoey sex partners were private residences (37%) and hospitality settings (31%), followed by sex-on-premises type settings (22%), other settings (20%), and public spaces (4%). No differences in settings for meeting kathoey partners by sexual orientation were identified (all p ³ 0.15; Table 2).

TABLE 2. Usual Setting for Meeting Male, Kathoey, and Female Sex Partners in the Previous 12 Months Overall and by Self-Identified Sexual Orientation

		Overall			Heterosexual-identifying[h]		Bisexual/homosexual-identifying[i]			
		n	%	(95% CI)	*n*	%	*n*	%	F-statistic[j]	*p*-value
Male sex partner	Any male sex partner[a]	54	61.4	(37.7, 80.7)	28	46.7	26	92.9	10.62	**< 0.001**
	Private residences[b]	26	48.2	(30.4, 66.4)	7	25.0	19	73.1	6.54	**0.031**
	Hospitality[c]	21	38.9	(24.5, 55.6)	16	57.1	5	19.2	6.77	**0.029**
	Public spaces[d]	5	9.3	(3.3, 23.4)	4[k]	14.3	1[k]	3.9	2.15	0.177
	Sex-on-premises[e]	13	24.1	(13.6, 39.0)	6	21.4	7[k]	26.9	0.34	0.575
	Other[f]	7	13.0	(4.7, 31.2)	5	17.9	2	7.7	1.42	0.263
Kathoey sex partner	Any kathoey sex partner[a]	49	55.7	(30.3, 78.4)	40	66.7	9	32.1	4.32	0.067
	Private residences[b]	18	36.7	(22.5, 53.7)	14	35.0	4[k]	44.4	0.37	0.560
	Hospitality[c]	15	30.6	(14.8, 52.8)	14	35.0	1[k]	11.1	2.42	0.154
	Public spaces[d]	2[k]	4.1	(0.9, 16.5)	2[k]	5.0	0[k]	0.0	0.34	0.577
	Sex-on-premises[e]	11	22.5	(11.4, 39.5)	8	20.0	3[k]	33.3	1.12	0.318
	Other[f]	10	20.4	(11.0, 34.8)	8	20.0	2[k]	22.2	0.02	0.886
Female sex partner	Any female sex partner[a,g]	78	96.3	(86.3, 99.1)	58	98.3	20	90.9	2.60	0.141
	Private residences[b]	40	51.3	(36.9, 65.5)	27	46.6	13	65.0	0.86	0.377
	Hospitality[c]	31	39.7	(30.9, 49.3)	29	50.0	2[k]	10.0	8.21	**0.019**
	Public spaces[d]	8	10.3	(4.0, 24.1)	7	12.1	1[k]	5.0	0.70	0.424
	Sex-on-premises[e]	10	12.8	(6.5, 23.6)	8	13.8	2[k]	10.0	0.17	0.687
	Other[f]	10	12.8	(4.7, 30.3)	8	13.8	2[k]	10.0	0.08	0.780

[a]Sex partner refers to any anal or vaginal sex partners in the previous 12 months. [b]Private residences includes friend's house, unit rental, and dormitory. [c]Hospitality settings includes bar, club, pub, beer shop, restaurant, and café. [d]Public spaces includes parks, football ground, movies, shops near factory. [e]Sex-on-premises type settings includes brothel, massage parlor, sauna, and hotel. [f]Other settings includes Internet, telephone, and other unspecified. [g]Missing data were excluded from denominator. Response to female sex partner in past year missing in 7 cases. [h]Heterosexual-identifying refers to behaviorally bisexual men who self-identified as exclusively or predominantly heterosexual on the Kinsey scale. [i]Bisexual/homosexual-identifying refers to behaviorally bisexual men who self-identified as bisexual pr predominantly or exclusively homosexual on the Kinsey scale. [j]Degrees of freedom = F(1, 9). [k]Note that small cell sizes ($n < 5$) should be interpreted with caution. Significant *p*-values (< 0.05) shown in boldface.

The most common settings for meeting female sex partners were private residences (51%) and hospitality settings (40%), followed by sex-on-premises type settings (13%), other settings (13%), and public spaces (10%) More heterosexual-identifying bisexual men (50%) than other bisexual men (10%) reported meeting female partners in hospitality settings ($p = 0.02$; Table 2).

Among men reporting meeting male ($n = 7$), kathoey ($n = 10$), and female ($n = 10$) partners in other settings: four men reported using phones and no men reported using the internet to meet male partners; three men reported using phones and two men reported using the Internet to meet kathoey partners; and four men reported using phones and no men reported using the internet to meet female partners.

ASSOCIATIONS WITH RISK BEHAVIOR BY SETTING

Inconsistent Condom Use. Report of inconsistent condom use was high across settings and partner genders, ranging from 46% with kathoey partners met in sex-on-premises type settings to 100% in some settings (note small cell sizes; Table 3). No significant differences were found in inconsistent condom use by usual setting for meeting sex partners (all $p > 0.05$; Table 3).

Number of Sex Partners. Among men reporting any sex partners of the given gender in the previous 12 months, bisexual men reported a median of five male (inter-quartile range [IQR] 4–10), three kathoey (IQR 2–10), and five female (IQR 2–11) sex partners in the previous 12 months. Number of male, kathoey, and female sex partners was missing for six (11%), six (12%), and 13 (17%) bisexual men, respectively.

No significant differences were detected in reporting a high number of male or kathoey sex partners (more than median number) by settings for meeting respective partners (all $p > 0.05$). A relatively higher proportion of men usually meeting male partners in sex-on-premises type settings reported a high number of male partners (75%) than men not meeting male partners in sex-on-premises type settings (36%, $p = 0.08$; Table 3).

A higher proportion of men reporting usually meeting female sex partners in hospitality settings reported a high number of female partners (56%) compared to men not reporting meeting female sex partners in hospitality settings (29%, $p = 0.04$; Table 3).

Frequently Drinking Alcohol Before Sex. A higher proportion of men reported frequently drinking alcohol before sex with kathoey sex partners (59%) compared to before sex with male partners (39%, $p = 0.04$) and female partners (36%, $p = 0.01$).

A higher proportion of men reporting meeting male sex partners in hospitality settings reported frequently drinking alcohol before sex (67%) compared to men not reporting meeting male partners in hospitality settings (21%, $p = 0.04$).

No significant differences were found in the proportion of men frequently drinking before sex with kathoey partners by setting, but a relatively higher proportion of men meeting kathoey sex partners in sex-on-premises type settings reported frequently drinking alcohol before sex (73%) than men not usually meeting kathoey partners in sex-on-premises settings (55%; $p = 0.07$).

No significant differences were found in the proportion of bisexual men frequently drinking before sex with female partners by setting, but a relatively higher proportion of men reporting meeting females in hospitality settings reported fre-

TABLE 3. High-Risk Behaviors in Relation to Settings for Usually Meeting Sex Partners, Stratified by Partner Gender

			Usually meets partner in setting	Inconsistent condom use[g]				High number of sex partners[h]				Frequently drinks before sex[i]			
			n	*n*	%	*F*-statistic[j]	*p*-value	*n*	%	*F*-statistic[j]	*p*-value	*n*	%	*F*-statistic[j]	*p*-value
Male sex partner[a]	Private residences[b]	Yes	26	22	84.6	1.11	0.319	13	54.2	3.15	0.110	7	26.9	1.29	0.286
		No	28	22	78.6			9	37.5			14	50.0		
	Hospitality[c]	Yes	21	18	85.7	0.75	0.408	10	50.0	0.22	0.650	14	66.7	6.10	**0.036**
		No	33	26	78.8			12	42.9			7	21.2		
	Public spaces[d]	Yes	5	5	100.0	1.55	0.244	2[k]	50.0	0.05	0.828	3[k]	60.0	1.55	0.245
		No	49	39	79.6			20	45.5			18	36.7		
	Sex-on-premises[e]	Yes	13	10	76.9	0.13	0.726	9	75.0	3.97	0.078	6	46.2	0.38	0.553
		No	41	34	82.9			13	36.1			15	36.6		
	Other[f]	Yes	7	5	71.4	0.99	0.346	2[k]	40.0	0.10	0.759	1[k]	14.3	2.46	0.151
		No	47	39	83.0			20	46.5			20	42.6		
Kathoey sex partner[a]	Private residences[b]	Yes	18	11	61.1	1.25	0.292	8	47.1	0.95	0.949	10	55.6	0.10	0.757
		No	31	23	74.2			12	46.2			19	61.3		
	Hospitality[c]	Yes	15	12	80.0	1.10	0.322	7	58.3	2.30	0.164	9	60.0	0.02	0.897
		No	34	22	64.7			13	41.9			20	58.8		
	Public spaces[d]	Yes	2[k]	2[k]	100.0	0.43	0.526	1[k]	100.0	1.22	0.298	1[k]	50.0	0.07	0.804
		No	47	32	68.1			19	45.2			28	59.6		
	Sex-on-premises[e]	Yes	11	5	45.5	2.94	0.121	4[k]	36.4	0.77	0.404	8	72.7	4.13	0.073
		No	38	29	76.3			16	50.0			21	55.3		
	Other[f]	Yes	10	8	80.0	1.30	0.284	3[k]	37.5	0.24	0.633	5	50.0	0.67	0.433
		No	39	26	66.7			17	48.6			24	61.5		
Female sex partner[a]	Private residences[b]	Yes	40	33	82.5	0.67	0.433	13	38.2	0.05	0.825	14	35.0	0.02	0.892
		No	38	29	76.3			13	41.9			14	36.8		
	Hospitality[c]	Yes	31	25	80.7	0.09	0.771	15	55.6	6.10	**0.036**	17	54.8	3.58	0.091
		No	47	37	78.7			11	29.0			11	23.4		
	Public spaces[d]	Yes	8	7	87.5	0.40	0.544	3[k]	50.0	0.22	0.652	2[k]	25.0	0.49	0.504
		No	70	55	78.6			23	39.0			26	37.1		
	Sex-on-premises[e]	Yes	10	7	70.0	2.51	0.147	6	66.7	1.76	0.217	5	50.0	0.50	0.496
		No	68	55	80.9			20	35.7			23	33.8		
	Other[f]	Yes	10	10	100.0	1.51	0.251	4[k]	66.7	1.32	0.281	2[k]	20.0	1.68	0.227
		No	68	52	76.5			22	37.3			26	38.2		

Notes. [a]Sex partner refers to any anal or vaginal sex partner/s in the previous 12 months. [b]Private residences includes friend's house, unit rental, and dormitory. [c]Hospitality settings includes bar, club, pub, beer shop, restaurant, and café. [d]Public spaces includes parks, football ground, movies, shops near factory. [e]Sex-on-premises type settings includes brothel, massage parlor, sauna, and hotel. [f]Other settings includes Internet, telephone, and other unspecified. [g]Inconsistent condom use reports not always using a condom during anal and vaginal sex with partners of given gender in the previous 12 months. [h]High number of sex partners defined as reporting more than the gender-specific median of sex partners; male partners: > 5; kathoey partners: > 3; female partners: > 5. Number of male, kathoey, and female sex partners was missing for 6 (11%), 6 (12%), and 13 (17%) bisexual men, respectively. [i]Frequently drinks before sex defined as always or almost always drinking alcohol before sex with partner of given gender. [j]Degrees of freedom = $F(1, 9)$. [k]Note small cell size ($n < 5$). Significant p-values ($p < 0.05$) shown in boldface.

quently drinking before sex (55%) than men not usually meeting females in hospitality settings (23%; $p = 0.09$).

DISCUSSION

We explored settings for meeting sex partners and risk behaviors among 88 bisexual men living in Vientiane Capital, Laos. Bisexual men in Vientiane commonly reported multiple partners and multiple partner types in the past year. Men met sex partners in a variety of settings, and high-risk behaviors—including inconsistent condom use, high partner turnover, and drinking before sex—were frequently reported across multiple settings. For instance, inconsistent condom use with male and female partners was over 70% for all settings; at least two-thirds of bisexual men meeting male and female partners in sex-on-premises type settings and females in other settings reported a high number of sex partners; and at least half of men reported frequently drinking sex with kathoey partners, regardless of setting. Unlike most previous studies, which focus on self-identifying gay and bisexual men (Grov & Crow, 2012; Grov et al., 2013; Horvath et al., 2006; Pollock & Halkitis, 2009), our study was unique in focusing on behaviorally bisexual men, of which the majority were heterosexual-identifying.

The most common settings for bisexual men to meet their sex partners were hospitality settings and private residences, followed by sex-on-premises type settings. These are similar to settings reported in the U.S. (Grov et al., 2007, 2013; Pollock & Halkitis, 2009), although the popularity of the internet (recorded in this analysis under "other" settings) appears far less pronounced in Laos. As seen elsewhere, most men reported more than one category of setting for meeting partners. Of interest, heterosexual-identifying and bisexual/homosexual-identifying men differed in patterns for partner seeking; bisexual men who were heterosexual-identifying were more likely to meet male and female partners in hospitality settings, while those who were bisexual/heterosexual-identifying were more likely to meet these partners in private settings. This has potential implications for accessing men for health promotion initiatives.

Bisexual men meeting sex partners in hospitality settings in particular engaged in higher-risk behaviors than men not frequenting these settings for meeting sex partners. First, meeting male and female sex partners in hospitality settings was associated with higher report of frequently drinking alcohol before sex, which is similar to a large national study in the U.S. that found associations between meeting partners in bars, clubs, and parties and alcohol use prior to sex (Grov et al., 2013). While this finding is not surprising given the availability and common focus on alcohol in such settings, it is concerning given numerous studies have linked consuming alcohol before sex to a higher incidence of HIV (Fisher, Bang, & Kapiga, 2007; Shuper et al., 2010; Woolf & Maisto, 2009). Although causal relations have not been established, there is potential for alcohol-associated disinhibition to increase riskier sex, and even without causality, alcohol may be an important marker for targeting high-risk men (Shuper et al., 2010).

Meeting sex partners in hospitality-settings was also associated with a history of having a high number of female partners, and relatively higher number of kathoey partners, which is an important finding given multiple sexual partnerships increase the risk of transmission of HIV and other STIs (Tanser et al., 2011). In contrast, U.S.-based studies have identified associations between meeting sex partners on the

Internet and through sex-on-premises venues and reporting a higher number of sex partners (Grov et al., 2013; Horvath et al., 2006; Xia et al., 2006). Although significant differences in inconsistent condom use were not detected across settings, there was a tendency for a higher proportion of men reporting meeting male and kathoey partners in hospitality settings to report inconsistent condom use than men not meeting partners in such settings. This is contrary to qualitative input from this same study (Johnston, 2012), which may be suggestive of differences in intention versus actual behavior.

Based on our findings, hospitality settings would be useful locations for sexual health promotion and HIV prevention initiatives to target bisexual men, given their popularity and attendance by men who engage in high-risk behavior. Furthermore, hospitality settings would in particular provide access to heterosexual-identifying bisexual men, who are traditionally harder to reach and engage. Heterosexually-identifying men may be less likely to access the drop-in centers in Vientiane, which largely attract effeminate men and male-to-female transgender people (Khan & Boyce, 2005). Sex-on-premises type settings should also be considered given their relative popularity in this group of men, and potential links to higher risk behaviors. In particular, hotels and guesthouses in Vientiane are also a common location of sexual encounters, regardless of setting for meeting sex partners (Lyttleton, 2008). Delivering sexual health promotion in hospitality and sex-on-premises type settings can provide information and condoms in a timely fashion (provided just prior to sex being initiated) and with broad reach, with the ability to reach high numbers and diverse individuals at risk. Internationally, bars, clubs, saunas, and sex-on-premises venues have been used to host a variety of HIV prevention initiatives targeting men who have sex with men (Blank et al., 2005; Daskalakis et al., 2009; French et al., 2000; Kalichman, 2010; Kelly et al., 1997; Lister et al., 2005; Taylor et al., 2005; Woods et al., 2001, 2010). However, evaluated interventions of venue-based prevention initiatives largely originate from the U.S., and it is not clear how they will generalize to other settings and communities, particularly in places such as Laos where non-Western typologies of same-sex attraction and behavior prevail (Lyttleton, 2008; Sheridan et al., 2009). Gay identity is a relatively new concept in Laos (Lyttleton, 2008), and the majority of men who have sex with men and women identify as heterosexual. The lack of a cohesive community, formal networks, or large commercialized gay scene may inhibit the direct adaption of aforementioned interventions to the Lao context (Bonell et al., 2006), and initiatives should rather target mainstream bars and clubs. The typology of sex-on-premises venues is also very different in Laos compared to other countries (CHAS, 2012; Lyttleton, 1999; Toole et al., 2006; United Nations Population Fund, 2008), and initiatives should focus on hotels, guesthouses and bars rather than brothels per se. HIV programs in Laos commonly use peer educators, and thus foster informal networks of gay, bisexual, and other men who have sex with men (CHAS, 2012). Peer education programs in developing countries are shown to be moderately effective at improving behavioral outcomes such as HIV knowledge or condom use, but no significant impact on biological outcomes such as sexually transmitted infection (STI) incidence is evident (Medley, Kennedy, O'Reilly, & Sweat, 2009). Nonetheless, integrating peer education along with condom-distribution into hospitality-based interventions could help to circumvent the limitations of not having formal networks or a commercialized gay scene while still targeting and tailoring information for high-risk groups such as bisexual men.

While private residences were also popular settings for meeting sex partners, these settings pose access challenges and they would be difficult for health educators and organizations to regularly identify and access. An exception in Laos is dormitories, low-cost student accommodation, which may be conducive to a range of initiatives. Dormitories only accounted for a minority of the responses for meeting sex partners in private residences in this sample, but were the most commonly reported living arrangement by bisexual men. Subsequently, they may still be an important setting to reach bisexual men for HIV prevention and outreach.

Based on our findings, possible interventions to reduce HIV and STI risk include the provision of free or low-cost condoms and lubricant to patrons of hospitality venues, including bars, beer-shops, and nightclubs, as well as hotel, guesthouses, and saunas. The Center for HIV/AIDS/STI (CHAS) and Population Services International (PSI) Laos have previously initiated the distribution of condoms through entertainment and hospitality venues, guesthouses and hotels, but evaluations suggest that the impact of these programs would improve with expanded coverage and higher visibility and promotion within venues (CHAS, 2012; Longfield, Panyanouvong, Chen, & Kays, 2011; Phanalasy et al., 2009; United Nations Population Fund, 2008). Further research may be necessary to determine the optimal placement of condoms for clientele and hospitality management alike to ensure that condoms are visible or well promoted but can be purchased discretely. Secondly, education and awareness campaigns could be integrated into hospitality settings to increase sexual health knowledge and awareness, promote demand for condoms, and encourage HIV and STI testing. While these interventions may not specifically target bisexual men, our research suggests that they would be able to reach large numbers of high-risk men. Further research should: explore the acceptability of such initiatives among bisexual men, hospitality and guesthouse owners and staff, and the general public in Vientiane (Warwick, Douglas, Aggleton, & Boyce, 2003); ascertain whether particular venues should be targeted to reach maximal numbers of high-risk men and their sexual partners; and determine whether education materials need to be tailored to specific subgroups.

An increasingly popular strategy for sexual health promotion is using online technologies and social media. This has been used in numerous international settings with applications such as education (Bowen, Horvath, & Williams, 2007; Gold et al., 2011; Hightow-Weidman et al., 2012; Pedrana et al., 2013), personalized information and counseling (Noar, Black, & Pierce, 2009), partner notification services (Bourne, Zablotska, Williamson, Calmette, & Guy, 2012; McFarlane, Kachur, Klausner, Roland, & Cohen, 2005), promotion of sexual health checks (Bourne et al., 2012; Friedman et al., 2014), outreach (McFarlane et al., 2005), and online testing (Klausner, Levine, & Kent, 2004). While most published studies and evaluations are based in the U.S., Australia, and Europe, there is increasing interest in internet-delivered interventions in Asia (Li et al., 2012), and a number of studies are emerging (Bao, Xiu, & Xiao, 2013; Nguyen thi, Le cong, & Van Tieu, 2013). Potential advantages and benefits include high coverage, low cost, ability to tailor interventions to personal needs and preferences, and adaptability to local contexts and population (Sullivan, Grey, & Rosser, 2013). While we found that the use of the internet and phones (grouped under other settings) was relatively low in this group in 2010, the penetration of the internet and 3G smart phones in Laos is increasing (Good 3G coverage in Laos, 2013; Ministry of Health & Lao Statistics Bureau, 2012), and key health partners should be preparing for these changes.

This study has a number of limitations. The sample size is small and therefore given the limited study power, analyses are constrained in that they may detect only strong associations between risk behavior and setting. Further, cell sizes in some analyses are small and this should be noted when interpreting estimates. The sample was achieved using a nonprobability sampling method, and therefore caution should be exercised when inferring study results to bisexual men in Vientiane. In particular, this sample of bisexual men is young, relatively well educated, and only a few men had ever been married. Results may not be representative of older bisexual men who have married but continue to have sex with men and/or kathoey or less educated bisexual men. Despite this, this sampling strategy was crucial in recruiting an otherwise largely hidden and difficult to reach group of men with high-risk behavior. Multivariable analyses showing the independent effects of each setting were not possible due to evidence of model over-fit and instability in estimates given the relatively small sample size. Further, the required grouping of setting locations and partner types may have obscured differences in risk by setting. Participants were asked where they usually met sex partners, and we did not collect data pertaining to where the sexual encounters occurred; qualitative findings have reported that sex does not always happen immediately, particularly within hospitality settings (Johnston, 2012), and thus other factors particular to the setting of sexual encounter may further influence condom use.

In conclusion, we found that bisexual men in Vientiane, Laos most commonly meet sex partners in hospitality settings and private residences. Inconsistent condom use was high across partners and genders, highlighting concern for HIV and STI transmission for bisexually active men. Hospitality settings and sex-on-premises type venues in particular may provide valuable opportunities for education and health promotion given they provide access to bisexual men with high-risk behaviors, may improve engagement of heterosexual-identifying bisexual men, and promote awareness and preparedness before sex is initiated.

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It goes both ways: a cross-sectional study of buying and selling sex among young behaviourally bisexual men in Vientiane, Laos

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Abstract. ***Background*:** Transactional sex may increase risk of HIV and sexually transmissible infections (STIs). In Laos, men who have sex with men are disproportionately affected by HIV, and bisexual behaviour among men is relatively common. The occurrence of transactional sex among behaviourally bisexual men in Vientiane, Laos was explored. ***Methods*:** In 2010, behaviourally bisexual men were recruited through enhanced snowball sampling to complete a behavioural survey. Reports of transactional sex partners (anal/vaginal sex) in the previous year, by direction of payment and partner gender, is described. ***Results*:** Of 88 participating behaviourally bisexual men (median age 22 years), 17 (19%) reported only selling sex, eight (9%) reported only paying for sex and nine (10%) reported both selling and paying for sex. Men reporting any transactional sex reported a median of four transactional sex partners and reported a higher number of total sex partners in the previous 12 months (median: 18.5 partners) than men reporting no transactional sex partners (median: 6 partners). Of 26 men who reported selling sex, 15 (58%) were paid by females, 15 (58%) were paid by males and 14 (55%) were paid by transgender sex partner(s); 11 (42%) reported consistent condom use (CCU) when selling sex. Of 17 men who reported paying for sex, 13 (76%) paid females, six (35%) paid males and two (12%) paid transgender partner(s); eight (47%) reported CCU when paying for sex. ***Conclusions*:** Young behaviourally bisexual men engaging in transactional sex may be at increased risk of HIV and STIs. Prevention interventions should consider the transient and informal nature of transactional sex in this population.

Additional keywords: bisexuality, commercial sex, HIV, men who have sex with men, sexual behaviour, transactional sex.

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Introduction

In the Lao People's Democratic Republic (herein referred to as Laos), transactional sex is usually considered in the context of female sex workers.[1] While female sex workers are more often the focus of international reports and research, worldwide, men sell sex in a variety of contexts,[2] and Laos is no exception. Transactional sex encompasses the exchange of sex for money, goods and favours, and considers people who may not identify as sex workers.[3] In a 2007 study of men who have sex with men in Vientiane, Laos, 22% had recently received money for sex and 28% had recently paid for sex.[4] Qualitative research also supports that exchange of money or other goods is relatively common in male-to-male relationships in Laos, particularly with paying younger males.[5] Globally, there is concern that engaging in transactional sex may increase men's risk of HIV.[3] In Laos, men who have sex with men are disproportionately affected by HIV (prevalence 5.6% in 2007 compared with 0.2% in the general population), and there is limited evidence that male-to-

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female transgenders and men who have sex with men who have sold sex may have higher HIV prevalence than their peers who do not sell sex.[4,6]

Worldwide, a substantial proportion of men who transact sex identify as bisexual or heterosexual, and may sell sex to men and/or women.[3] Bisexual behaviour among men in Vientiane is relatively common,[4,7] and young men who sell sex often report having both female and male clients.[7] However, there are no detailed data exploring the gender of transactional sex partners among bisexual men in Laos. In 2010, we conducted a study of behaviourally bisexual men and their sexual partners in Vientiane, Laos, to assess the potential risk for HIV transmissionthrough these networks. Previously reported results showed that behaviourally bisexual men commonly reported transactional sex; 30% reported being paid for sex and 19% reported paying for sex.[8] Other high-risk behaviours, including low rates of consistent condom use (CCU) and multiple sexual partners, were also widespread.[8] In this paper, we expand on these results and further explore the occurrence of transactional sex among behaviourally bisexual men in Vientiane by considering gender, direction of payment and implications for risk and HIV prevention in Laos.

Methods

Recruitment methods have been described previously.[8,9] In brief, a retrospective cross-sectional behavioural survey was conducted in Vientiane, Laos, between June and October 2010. Behaviourally bisexual men and their sexual partners were recruited through enhanced snowball sampling, starting with 10 behaviourally bisexual male recruits ('seeds'), and continuing for two to three waves of recruitment. Each participant could refer up to five of their past year sexual partners. Participants were required to be aged 18 years and older and to have engaged in anal, vaginal or oral sex in the previous 12 months. Prior to recruitment, a mapping exercise was used to identify locations where bisexual men socialised in Vientiane. In order to broaden representativeness of the final sample, seeds were purposively selected from different sites and seeds with diverse attributes, such as sexual identity, education and number of sex partners, were intentionally included.

This analysis is limited to male participants who reported anal sex with men and/or kathoey and vaginal or anal sex with women in their lifetime (behaviourally bisexual men). For the purpose of brevity, herein they will be referred to as bisexual men. Kathoey is short for *kathoey phom yao* or *kathoey teng ying* and is the common term in Laos and Thailand for male-to-female transgenders, who are birth-assigned males but self-identify as female (or non-male), and may appear and act as female or male.[10]

Data were analysed using Stata (Version 11; Stata Corp., College Station, TX, USA). Transactional sex was defined as anal or vaginal sex with paid or paying partners during the previous 12 months. For each gender and transaction type, participants self-reported the number of sex partners and condom use in the previous 12 months. We describe the proportion of bisexual men who report no transactional sex partners, only paying for sex (participant gave money, gifts or favours to at least one person in return for sex), only selling sex (participant received money, gifts or favours from at least one person in return for sex), and both paying for and selling sex in the previous 12 months. In each of these categories, we report on the median number of transactional sex partners and total number of sex partners in the previous 12 months. The number of transactional sex partners as a proportion of total number of sex partners was calculated individually, and the median proportion is reported. The median number of total sex partners was compared between those reporting any and no transactional sex partners by using a Mann–Whitney *U*-test to a significance level of $P < 0.05$.

Among bisexual men paying for sex and selling sex, we respectively describe the proportion reporting male, female and kathoey transactional partners and CCU when paying for or selling sex with respective partners. CCU was defined as always using a condom during anal and vaginal sex in the previous 12 months.

Ethical approval was obtained from the ethical review committees of the Alfred Hospital and Australian National University, Australia; and the University of Health Sciences, and the National Ethics Committee for Health Research, Laos.

Results

Overall, 342 sexual partners were nominated through snowball sampling, and 298 (87%) individuals participated in the behavioural survey, of which 189 were male. Eight males were excluded due to incomplete data on gender of lifetime sex partners. The remainder of the analysis is based on 88 (49%) males who reported anal/vaginal sex with women and men and/or kathoey in their lifetime (i.e. behaviourally bisexual). The median age of bisexual men was 22 years (interquartile range [IQR] 20–24). The majority (75%) reported any higher education, and 63% were currently studying (Table 1). Half of the men were currently employed, and the most common settings of employment were in an office (47%) or bar/nightclub (18%). Two men reported working in a massage parlour or sauna. Four men had ever been married (three currently married), and all of these men reported having children. Men most commonly reported living in a dormitory or share room (42%) or with their parents (34%).

Of the 88 bisexual men, 17 (19%) reported only selling sex (median of five transactional sex partners), eight (9%) reported only paying for sex (median: 4) and nine (10%) reported both selling and paying for sex (median: 6.5) in the previous 12 months (Table 2). Fifty-four (61%) bisexual men reported no transactional sex partner, including two men reporting only transacting oral sex.

Twenty-two out of 34 men reporting any transactional sex had complete data on number of sex partners. Based on these men, men reporting any transactional sex reported a higher number of total sex partners in the previous 12 months (median: 18.5) than men reporting no transactional sex partners (median: six; $P = 0.01$) (Table 2). Among men reporting any transactional sex, transactional sex partners accounted for a median of 29% of all sex partners.

Of the 26 bisexual men reporting ever selling sex in the previous 12 months, men reported selling sex to female (58%),

male (58%) and kathoey (55%) sex partners. Overall, 11 (42%) bisexual men reported CCU when selling sex, ranging from 27% CCU when selling sex to female partners to 60% CCU when selling sex to male partners (Table 3).

Of the 17 bisexual men reporting ever paying for sex in the previous 12 months, men reported paying for sex from female (76%), male (25%) and kathoey (12%) sex partners. Overall, eight (47%) bisexual men reported CCU when paying for sex, and the percentage was similar when paying female (46%), male (50%) and kathoey (50%) partners (Table 3).

Table 1. Demographic characteristics of participating bisexual men

	Bisexual men	
	n	%
Number of participants	88	100
Age group (years)		
18–19	14	16
20–24	56	64
25–29	14	16
30–32	4	5
Currently studying	55	63
Completed higher education[A]	66	75
Currently employed	45	51
Office	21	47
Bar/nightclub/beer shop	8	18
Restaurant	4	9
Home	4	9
Massage parlour/sauna	2	4
Shop	2	4
School/university	2	4
Hotel	1	2
Construction site	1	2
Ever been married	4	5
Originally from Vientiane?	39	44
Living arrangement		
Share room or dormitory	37	42
Live with parents	30	34
Live with relative/s	13	15
Live with partner	3	3
Live alone	2	2
Other	3	3

[A]*Higher education* defined as any education beyond upper-secondary school.

There was considerable overlap in bisexual men reporting male, female and kathoey sex partners. Among 34 bisexual men reporting any transactional sex partner, three (9%) reported male and kathoey transactional sex partners, five (15%) reported female and kathoey, four (12%) reported female and male, and six (18%) reported female, male and kathoey transactional sex partners.

Discussion

In this study of young behaviourally bisexual men in Vientiane, we found that it is relatively common for bisexual men to transact sex, but the gender and direction of payment vary and frequently overlap. Our results suggest that young bisexual men who transact sex may be at higher risk of HIV and STIs than those who do not transact sex. However, sexual transactions may not be the main source of the elevated risk; multiple sex partners and condomless sex with non-transactional sex partners may be more important.

Thirty-nine per cent of bisexual men reported any transactional sex partner in the previous year, of which one-quarter reported both buying and selling sex, and over one-half reported more than one gender of transactional sex partners. Previous studies have reported that men selling sex in Laos are driven by financial reasons,[7] but this does not fully explain the combination of both buying and selling sex seen in some men. While other studies have focussed on men selling sex to kathoey[5] and buying sex from women,[7] we found that a similar proportion of bisexual men sold sex to male, female and kathoey partners, and as well as paying female partners, one-third of bisexual men who bought sex paid male partners. Further qualitative research is needed to elucidate how partner gender affects the motivations, perception and negotiation of transactional sex.

That nearly 30% of all sex partners were transactional demands a more nuanced view of transactional sex in this population. It is a relatively small proportion to what one may expect from commercial sex workers, and suggests that bisexual men transacted sex informally and occasionally rather than as a sole source of income. In support of this, most men did not work in traditional settings associated with direct sex work.[11] Only three men reported working at a massage parlour, sauna or hotel where direct sex work may occur in Laos.[12] Several men

Table 2. Transactional sex encounters in the previous 12 months among behaviourally bisexual men (*n* = 88)
IQR, interquartile range

	n	%	Number of transactional sex partners median (IQR)	Total number of sex partners[D] median (IQR)
No transactional sex partner	54	61	NA	6 (4–10)
Only sold sex[A]	17	19	5 (3–9)	24 (4–44)
Only paid for sex[B]	8	9	4 (1–5)	14 (5–20)
Paid and sold sex	9	10	6.5 (3–13)	16 (10.5–56.5)
Any transactional sex[C]	34	39	4 (3–10)	18.5 (5–44)

[A]Participant received money, gifts or favours for sex from at least one person in the previous 12 months.
[B]Participant gave money, gifts or favours to at least one person in the previous 12 months in exchange for sex.
[C]Participant exchanged money, gifts or favours for sex with at least one person in the previous 12 months, either selling sex or paying for sex.
[D]Anal and/or vaginal sex partners in the previous 12 months.

Table 3. Proportion selling and paying for sex BY female, male and kathoey sex partners, and consistent condom use when selling and paying for sex

	Ever sold sex[A]		CCU[B] when sold sex		Ever paid for sex[C]		CCU[B] when paid for sex	
	n	%	*n*	%	*n*	%	*n*	%
Total	26	30	11	42	17	19	8	47
Female	15	58	4[D]	27	13	76	6	46
Male	15	58	9	60	6	35	3[D]	50
Kathoey	14	54	6	43	2[D]	12	1[D]	50

[A]Participant received money, gifts or favours for sex from at least one person in the previous 12 months.
[B] CCU, consistent condom use. Reports always using a condom during anal and vaginal sex in the previous 12 months.
[C]Participant gave money, gifts or favours to at least one person in the previous 12 months in exchange for sex.
[D]Note, small cell sizes ($n < 5$) should be interpreted with caution.

worked in bars, clubs or beer shops, which may be associated with sex work,[1] but given the relatively low number of transactional sex partners in the past year (median of four), it is unlikely that these men were working for the sole purpose of selling sex. Nonetheless, in the context of men who likely do not identify as sex workers, transactional sex still accounted for a considerable proportion of sex partners. Further, transactional sex existed within complex networks also involving regular and casual partners, all of which may be contributing to the risk of HIV and STIs for this group. Subsequently, a dyadic model of risk and intervention involving sex workers and their clients, common in dialogue on female sex workers, is unlikely to adequately address HIV risk and transmission in this context.

Even though the number of transactional sex partners was relatively low, bisexual men reporting transactional sex partners had a substantially higher number of sex partners overall compared with bisexual men not engaging in transactional sex. This has also been reported in other settings among men who sell sex.[13,14] High numbers of partners may be indicative of concurrent relationships or frequent partner turnover, both of which increase risk of HIV and STI transmission.[15–17] Less than half of the men reported CCU with transactional sex partners whom they sold sex to or bought sex from. This was similar for all partner genders, although trending towards lower CCU when selling sex to female partners. In comparison, bisexual men from the same study reported 7% CCU with regular partners and 35% with casual partners.[8] Thus, while CCU was relatively higher with transactional sex partners, it still poses a high risk of disease transmission, particularly when in conjunction with numerous sex partners. Further research is needed to understand whether transactional sex was negotiated as one-off or recurring engagements and how this may influence condom use and risk.

These results emphasise the importance of including bisexual men in conversations and initiatives around transactional sex in Laos. Currently, transactional sex in Laos predominantly considers service women or female sex workers, who have relatively lower HIV prevalence (0.7%) than men who have sex with men (5.6%),[4,18] and who report higher CCU when selling sex (70%).[18] Our study shows that transactional sex is relatively common among bisexual men and coincides with other high-risk behaviours such as multiple sex partners. However, it is difficult to draw absolute conclusions about increased HIV and STI risk because there is limited biological data for bisexual men in Laos. The aforementioned study reported a similar HIV prevalence between behaviourally bisexual (6.1%) and homosexual (5.2%) men, while disaggregated data on STI prevalence is not known.[4] However, the sexual networks of bisexual men include men who have sex with men, female sex workers and kathoey,[9] who each have a moderate to a very high prevalence of chlamydia and gonorrhoea.[18,19] Other settings have demonstrated that bisexual men have lower engagement in HIV prevention programs than other men who have sex with men and are less likely to access HIV testing,[20–22] thus increasing the risk of undiagnosed infection. In Laos, programs for men who have sex with men largely cater to kathoey and effeminate men,[23,24] and bisexual men who identify as straight may not feel comfortable in these settings nor be adequately engaged in these programs.[5]

Inclusion of bisexual men in HIV prevention and sexual health programs should be done by focusing on risk behaviours rather than risk groups, in order to facilitate more comprehensive coverage of relevant messages and account for overlapping risk behaviours in a manner not dependent on identity – whether it be sexual identity or identity as a sex worker.[25] Previous work from this study has shown that bars, night clubs and beer shops are the most common settings for young bisexual men to meet sex partners, and these venues may be particularly useful to reach men who demonstrate high-risk behaviour and heterosexual-identifying bisexual men.[12] Key points of intervention should include promotion of consistent condom use with all sexual partners, frequent voluntary HIV testing and counselling, routine STI screening and treatment, and early initiation of antiretroviral therapy (ART).[26,27] In addition to education and counselling, structural interventions are needed to support: (i) the availability of affordable condoms and lubricant; (ii) clear guidelines for asymptomatic STI testing and the strategic use of ART; and (iii) improved access to comprehensive sexual health services.

This study has several limitations. First, the sample size limits the study power to detect differences in the number of sex partners by different levels of engagement in transactional sex, and small cell sizes in some analyses should be noted when interpreting estimates. Second, the sample was recruited using a non-probability sampling method, and caution should be exercised when inferring study results to the broader population of bisexual men in Vientiane. There are no robust estimates of the size or profile of the bisexual male population in Laos in order to assess the representativeness of this sample;[28] however, this sample of bisexual men is young, relatively well educated and only a few men had ever been married, and thus results may not be representative of older bisexual men who have married but continue to have sex with men and/or kathoey, nor less educated bisexual men. Nonetheless, using restricted snowball sampling helped to limit the influence of seeds on the final sample composition and helped to recruit a relatively diverse group of bisexual

men who are difficult to capture through probability-based sampling methods.[29] Finally, a long recall period of 12 months was used to assess the number of partners and CCU, which may have increased recall bias.

Conclusions

In conclusion, we found that a substantial proportion of young behaviourally bisexual men in Vientiane transact sex, but they may do so irregularly and occasionally. Both paying for and selling sex was common, as was reporting transactional partners of multiple genders, thus alluding to complex and varied motivations for transactional sex in this setting. High numbers of overall sex partners among those who transact sex, as well as low CCU, suggest that these men are at increased risk of HIV and STI transmission. Prevention initiatives targeting bisexual men in Laos should incorporate education and health promotion related to transactional sex.

Conflicts of interest

The authors declare that they have no competing interests.

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Factors Influencing Access to Sexual Health Care Among Behaviorally Bisexual Men in Vientiane, Laos: A Qualitative Exploration

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Abstract

In Laos, men who have sex with men (MSM) are disproportionately affected by HIV, and bisexual behavior among men is common. We conducted a qualitative study to explore access and influences on sexual health care seeking among bisexual men in Vientiane. In 2013, behaviorally bisexual men were recruited from bars, clubs and dormitories for 5 focus group discussions and 11 in-depth interviews. Participants (aged 18-35 years) commonly reported high-risk sexual behaviors, yet most had never been tested for HIV, and none reported testing for sexually transmitted infections. Common barriers to testing were low perception of risk, expectation of symptoms, fear of HIV, shyness, perceived stigma, confidentiality concerns, and waiting times. Many men were unaware of available services. Most clinics cannot provide comprehensive HIV and sexually transmitted infection services. Strategies are needed to generate demand for testing, improve the capacity of sexual health care providers, and promote available services among behaviorally bisexual men in Vientiane.

Keywords

bisexuality, men who have sex with men, health care utilization, HIV testing, sexually transmitted infection testing, Laos

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Background

HIV counseling and testing are key components of comprehensive HIV prevention, care and treatment.[1,2] Regular HIV and sexually transmitted infection (STI) testing ensures early detection of infection, which allows prompt treatment, reducing negative health outcomes and preventing ongoing transmission.[2-4] In Asia, men who have sex with men (MSM) have 18.7 times greater odds of HIV infection compared with the general population,[5] and HIV prevalence upward of 10% is reported among MSM in urban areas of Thailand, Myanmar, China, and India.[6] In Lao People's Democratic Republic (herein referred to as Laos), MSM are a priority population for HIV prevention. A study in Vientiane (2007) demonstrated an HIV prevalence of 5.6% (compared with 0.2% in the general population),[7] while an integrated biobehavioral survey among MSM in Luang Prabang (2009) found no cases of HIV but moderate-to-high prevalence of rectal chlamydia (7.3%) and gonorrhea (1.7%).[8] Furthermore, 21% of MSM reported experiencing STI symptoms in the previous 3 months. The national target for HIV testing coverage among key populations is 80%,[9] but in Luang Prabang, 16% of MSM reported being tested for HIV in the past year,[8] and in Vientiane, only 6.3% of MSM reported having ever tested for HIV.[7]

In Laos, behaviorally bisexual men (herein referred to as bisexual for the purpose of brevity) are an important subgroup of MSM when considering sexual health risk and access to HIV prevention services. First, bisexual behavior is relatively common among men in Laos: In one study, 8% of young men reported sex with at least 1 man and 1 woman in the previous 3 months,[10] and in another, 39% of MSM reported sex with a woman in the previous 3 months.[7] Second, bisexual men report high-risk behaviors, including low rates of consistent condom use and multiple sex partners.[11,12] Third, bisexual men commonly self-identify as heterosexual or straight,[11] and thus may be invisible to HIV prevention outreach, education, and health services.[13-16] In Laos, HIV prevention programs for MSM mostly target male-to-female transgender women (commonly known as *kathoey teng ying* or *kathoey phom yao* in Laos and herein referred to as "kathoey") or self-identifying gay men[17,18] and may not adequately reach bisexual men. The engagement of bisexual men with HIV and sexual health services in Laos is not known.

It is important to understand the influences on bisexual men's health care seeking in order to inform services and prevention initiatives that are better able to meet their needs. We conducted a qualitative study of sexual risk behavior, health care seeking, and determinants of sexual health care access and utilization among bisexual men in Vientiane.

Methods

Study Design and Setting

To explore influences on health care access and utilization, a qualitative design was employed using focus group discussions (FGDs) and in-depth interviews. The study was based in Vientiane, the capital of Laos.

HIV and STI testing at services accessible to MSM in Vientiane are summarized in Table 1. CD4+ testing, HIV treatment and management are available at 2 central hospitals. There are no specific public sexual health clinics, and STI testing in public hospitals is available through general outpatient services or gynecology clinics.[19]

Study Population

Participants were behaviorally bisexual men (reported ever having anal or oral sex with men and/or kathoey, and ever having anal or vaginal sex with women) aged at least 18 years and currently residing in Vientiane.

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Table 1. HIV and STI Testing Services Available to Men Who Have Sex With Men in Vientiane.

	HIV Testing[a]	STI Testing[b]	MSM-Friendly[c]	Anonymous[d]
15 district and central hospitals	✓	✓		
MSM clinic at Setthathirath Hospital	✓	✓	✓	✓
Drop-in center for male-to-female transgenders and other high-risk groups (Peuan Mai)	✓[e]	✓	✓	✓
Youth clinic (Vientiane Youth Centre)	✓[e]	✓[f]	✓	✓
Selected private clinics		✓		

Abbreviations: HIV, human immunodeficiency virus; MSM, men who have sex with men; STI, sexually transmitted infection.
[a]All HIV testing in Laos is done through sequential rapid antibody testing with Determine and Uni-gold and is free of charge.
[b]Hospital clinics rely predominantly on syndromic management with limited microscopy or culture-based testing for chlamydia and gonorrhea and blood testing for syphilis. Testing costs ~US$18 (US$6 for microscopy only).
[c]MSM-targeted or MSM-sensitive service (health care providers have specific training in MSM sexual health needs).
[d]Name not required to access service.
[e]Single rapid testing with Determine; positive cases are referred to hospital for repeat rapid testing.
[f]Selected STI testing (gonorrhea, genital warts, bacterial vaginitis, and cervicitis) available since late 2013. STI diagnoses are made through Gram-stain microscopy and physical examination. For men reporting sex with men, urethral, anus, and oral specimens are tested. Syndromic management and presumptive treatment is practiced for all other STIs, or patients may be referred to a hospital for further testing.

Participants were screened for eligibility during recruitment and booking of FGD/interview. During the interviews, 2 men reported non-bisexual behavior. One reported no sexual contact with women and another no sexual contact with men or kathoey, although he was dating and attracted to kathoey. These 2 interviews were retained as behavioral outliers as they gave useful insight into access to sexual health care for other MSM and in the latter case, the complexity of attraction and trajectory of behavior in some bisexual men.

Five FGDs and 11 interviews involved 31 individual participants (4 participated in more than 1 phase). Three to 7 men participated in each FGD. Participating bisexual men were aged 18 to 35 years (mean age 22.7 years). Most described their sexual identity as "man" (n = 14) or *phu sai tae* ("real man"; n = 12), both synonymous with "straight." Three participants self-identified as gay and one as "gay (kathoey)." Twenty-one men completed a survey prior to FGDs; half reported any higher education, and most (71%) were currently studying.

In addition, key experts working or involved with sexual health, HIV or sexually diverse populations were sought for their experience and opinions about the services available for behaviorally bisexual men in Vientiane. Fourteen experts were interviewed from health services (n = 6), local and international nongovernmental organizations (n = 4), government (n = 1), and peer community (n = 3). Positions included peer educators, doctors, project managers, and senior officials (Table 2).

Recruitment

From May 2013 to April 2014, 3 Lao-national male peer researchers recruited bisexual men from bars, clubs, dormitories, a sauna, and personal networks through purposive and convenience sampling. We sought men with varying sexual identity, gender attractions, and sexual experience. Peer researchers observed patrons, made casual conversation, and introduced the study to potentially eligible men. FGD participants were invited to participate in an interview or confirmatory FGD at a later date. Purposive sampling was used to identify local experts through professional networks of Burnet Institute.

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APPENDIX A: RELEVANT PEER-REVIEWED PAPERS PUBLISHED DURING CANDIDATURE

Table 2. Profile of Key Experts Interviewed.

Type of Organization	Type of Position Held
Health service	Doctor
Health service	Manager
Specialized health service	Outreach worker
Specialized health service	Nurse
Government department	Senior official
Specialized health service	Manager
Local NGO	Senior official
Local NGO	Project manager
Community	Community leader
Specialized health service	Doctor
International NGO	Researcher
International NGO	Manager
Community	Peer educator
Community	Peer educator

Abbreviation: NGO, nongovernmental organization.

Procedures

FGD and interviews were conducted in a stepwise manner to allow for preliminary analysis and feedback into subsequent phases. Data collection was initiated with FGDs, followed simultaneously by interviews with bisexual men and experts. At the end of the data collection period, a confirmatory FGD was held with bisexual men to assess the resonance of the main study findings with participants and explore unclear or incomplete findings.

A Lao-national male facilitator (NP) led FGDs and interviews in Lao language at the Burnet Institute Lao office. All FGDs and interviews were audio-recorded, and FGDs also included a peer researcher present as note-taker. All participants provided informed verbal consent.

Prior to the FGDs, participants completed a questionnaire on sociodemographic factors. Sexuality was assessed by an open-ended question. To depersonalize sensitive data, FGD participants were asked broad questions about what they know, think, or had heard from other people. Areas of exploration were informed by findings from an earlier survey of bisexual men,[11,12] health belief theory,[20] and social cognitive theory,[21] and included relationships, condom use, social norms, health beliefs, access to information and services, and desirable characteristics of services. Health belief theory considers that behavior change is motivated by perceived benefits of change, seriousness of the condition, and beliefs that one is susceptible to the condition and that the benefits of change outweigh the costs. Social cognitive theory considers that behavior is determined through interaction between cognitive, behavioral, and environment factors, and places emphasis on social norms and influence. In-depth interviews were semi-structured and sought more personal information on sexual experiences, condom use and use of health services.

Participants were reimbursed 50 000 kip (approximately US$6) for expenses incurred and given condoms, lubricant, and brochures on sexual health, HIV, and available health services.

AB facilitated interviews with experts in English or English/Lao with verbal translation by NP (subsequently audio-recorded and transcribed). Experts gave written informed consent for interview.

Data Management and Analysis

Preliminary analysis was conducted throughout data collection and recruitment was concluded when new issues stopped emerging.

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Interview transcripts and FGD notes were translated into English and imported into QSR International's NVivo 10 software[22] for management and analysis. Translations were amended in consultation with the bilingual facilitator to improve readability. Thematic analysis employed inductive (data-driven) coding of barriers and/or facilitators of health care access. Subthemes were then grouped under themes reflecting 4 dimensions of health service access and utilization (Table 3). These were influenced by the Health Access Livelihood Framework, which considers 5 dimensions of access to health care through a perspective of inequity due to poverty.[23] Data are presented under subheadings corresponding to categories and themes, and subthemes are highlighted in boldface in the text.

To assess the credibility of data and researcher interpretation, preliminary findings were presented with opportunity for feedback during a confirmatory FGD with bisexual men and a workshop with key stakeholders. No substantial changes to interpretation resulted from this feedback.

No identifying information was collected and all data are anonymous. Experts are identified by type of organization and position.

Ethics

Ethics committees of the Alfred Hospital (141/09) and Monash University (CF12/3883–2012001848), Australia and the University of Health Sciences (009/13), Laos approved the study.

Results

Behavior

Sexual Risk Behavior. Most men indicated a gender preference but varied in reporting primary sexual attraction to men or women, masculine men, or feminine men. Irrespective of preference, most participants described current or recent relationships with both men and women. FGD participants, but fewer interviewees, also described kathoey sexual partners. Men generally reported both anal and oral sex with male or kathoey partners; few reported oral sex only. Most participants reported only vaginal sex with female partners.

Frequently, participants reported high-risk sexual behaviors. Participants considered it usual for men to have **multiple sex partners** regardless of sexuality, including concurrent and serial sex partners. Men sought concurrent partners due to boredom, desire for immediate sex, experimentation, primary partner unavailable, money incentive, or alcohol. **Transactional sex** was commonly reported and often involved both buying and selling sex. Participants most commonly described being paid for sex by kathoey, followed by buying sex from women.

Many men explicitly described **concurrent** male and female partners. No participants were married, but some men disclosed sex with a married man or that they would pursue sex with men and kathoey when married.

> Mostly when seeing men, they like to satisfy us, but for women, they always want us to satisfy them. Personally, I am seeing both a man and a woman because women are quite difficult to satisfy. I'm usually seeing around four people at the same time. (FGD participant)

Most participants indicated **inconsistent condom use**, ranging from infrequent use to reporting using condoms approximately 80% of the time. Few men reported always using condoms, stating preference for nonpenetrative sex or abstinence if a condom was unavailable.

The most common reasons for not using a condom were the following: condoms were not available, sex with a boyfriend/girlfriend or known partner, reduced sensation and pleasure, trust, and not wanting to interrupt sex.

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Table 3. Themes and Subthemes Concerning Sexual Risk and Sexual Health Care Access and Utilization.[a]

Category	Theme	Subtheme
Behavior	Sexual risk	Inconsistent condom use
		Alcohol before sex
		Transactional sex
		Multiple sex partners
		Concurrency (concurrent male and female partners)
	Health care utilization	HIV and STI testing history (HIV and STI testing)
		Consult with friends (friends)
		Self-treatment (self-treat)
		General clinic
Determinants of health care access and utilization	Awareness of health, risk, and services	Perception of risk
		Expect symptoms (symptoms)
		Fear of HIV
		Knowledge of available services
		Promotion and advertisement
		Restrictions on promotion (restrictions on promotion)
	Acceptability of sexual health services	Shyness
		Confidentiality
		Friendliness (friendly)
		Stigma
		Target clientele
	Health system factors (availability and adequacy)	Comprehensive sexual health care (comprehensive services)
		Integrated HIV testing and management
		Private
		Quality
		Counseling
		Referral system
		Supplies and equipment
	Accessibility and convenience	Distance
		Long waiting times
		Crowding (crowded)
		Cost
		Internet and telephone
		Community-based testing

Abbreviations: HIV, human immunodeficiency virus; STI, sexually transmitted infection.
[a]Category and themes respond to subheadings, and subthemes are bolded in text. Where wording in text differs, the exact phrasing is indicated in brackets.

> I don't use condoms with women because we are close friends. Like when it's raining and they cannot go back to their room, so we have to sleep together; I'll check if there is a condom, but I still have to have sex regardless. (FGD participant)

Common motivators for condom use were the following: sex with a new or casual partner, sex with female sex workers, sex with kathoey, or partner perceived as promiscuous. Preventing disease and pregnancy were mentioned, with pregnancy usually the bigger motivator.

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Alcohol and intoxication were central to the sexual narrative: men attributed condomless sex to intoxication and frequently described consuming **alcohol before sex**; men met sex partners in bars, nightclubs, and beer shops; and alcohol often motivated sex with men and kathoey.

> If it's urgent, like when we are drunk, of course we will ask friends who are kathoey to help. We also have friends who are straight to help each other [relieve sexual tension]. (FGD participant)

Health Care–Seeking Behaviors. Given the extent of sexual risk reported by this group of young bisexual men, they should have regular **HIV and STI testing** and treatment for symptomatic conditions. However, few participants had ever been tested for HIV. A few additional men reported testing but did not specify what for; none specified STI testing, even if symptoms were experienced.

> I sometime go to check my health, but I never get any STI tests as well as with HIV. (Interview participant)

Of 6 participants who mentioned testing and specified where, 2 reported testing at the MSM-specific Peuan Mai drop-in center, 2 at a hospital, 1 at a clinic, and 1 in Thailand (Table 1). Several participants had undergone general health checkups.

> I had checked my health last year during That Luang festival. I had acne around my body. I do not plan to get an HIV test. (Interview participant)

Participants preferred to seek advice from **friends** and **self-treat** with drugs bought from a pharmacy or traditional medicine. Experts also stated that men prefer to self-treat symptomatic STIs and raised concerns about antibiotic resistance due to incorrect or substandard antibiotics.

Determinants of Health Care Access and Utilization

Participants and experts identified numerous factors influencing health service access, utilization and acceptability, including perceived barriers, factors associated with choice of health services, and features described as favorable for broadening access.

Awareness of Health, Risk, and Services. Participants generally had low **perception of risk** and saw testing as unnecessary. Many mistakenly believed they would experience **symptoms** if infected with HIV or STIs so thought that they only needed sexual health services when sick.

> Never got an HIV test. I don't plan to have it yet. If I have HIV, I would become more sick. But I don't think I could have it. I am confident about me. (Interview participant)

Some participants did not perceive STIs as serious. Conversely, a few participants thought that testing could provide reassurance following unsafe sex, transactional sex, or having "played around."

Fear of HIV and knowing their status deterred participants from HIV testing.

> If I am infected with HIV, I will be gloomy and worry a lot. I will commit suicide. That is why I don't want to know if I have HIV or not. (Interview participant)

Experts reiterated this, suggesting stigmatization and fear-based HIV campaigns encouraged the view of HIV as a death sentence. Resistance to HIV testing may lead to delayed diagnoses and compounds men's associations of HIV and poor health.

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APPENDIX A: RELEVANT PEER-REVIEWED PAPERS PUBLISHED DURING CANDIDATURE

> They still stick with the previous advertisement images. This is a very scary disease. A very scary movie! It makes everyone afraid . . . It's going to be very bad; it's going to be the worst if they get infected with these diseases. (Interview, Project manager, local NGO)

Poor **knowledge of available services** was common; many men only knew of the hospital-based services or did not know where other services are located.

> I never had any advice and I do not know who I can talk to. (Interview participant)

In addition to health promotion to improve sexual health knowledge, risk perception, and demand for testing, many participants and experts alike mentioned the need for increased **promotion and advertisement** of health services.

> Some people don't even know. I know that there is a center but I don't know where [it is]. They should promote the center. (Interview participant)

Experts voiced concern over **restrictions on promoting** anything directly related to MSM in the general population. This limits awareness of MSM-friendly clinics and information related to their sexual behavior and health, particularly for straight-identifying bisexual men.

Acceptability of Sexual Health Services. Themes around acceptability reflect both perceptions of health services and actual experiences. A persistent theme was being embarrassed to access services for sexual health matters and potentially disclosing sexual orientation.

> [I] feel a little bit scared and shy around people at that place [public hospital]. [I'm] afraid that they will say that "I am like this, like that." [I'm] shy when they ask, "what disease have you come to check-up for?" (FGD participant)

Shyness and embarrassment were interlinked with social and structural barriers such as stigma, clinics' public locations, and confidentiality concerns. Participants anticipated judgmental attitudes from health care workers and others who might see them attending the service, and STIs were considered "a sensitive disease." Some of the perceived barriers to utilizing sexual health services were lack of awareness of MSM-friendly services that provide anonymous HIV testing and counseling. Reservations about the **confidentiality** of sexual health services were common, and also mentioned by experts.

Many participants wanted **friendly** services with approachable, open-minded staff. Hence Peuan Mai drop-in center (see Table 1) appealed to 1 participant:

> I am very impressed with the service of the drop-in-center. They are very friendly, they are not arrogant. They serve us like family. (Interview participant)

Experts commonly expressed concern over **stigma** discouraging bisexual men from seeking sexual health care. Stigmatization was allegedly directed at multiple levels—sexual orientation, STIs, and HIV—and therefore cumulative. A community leader referred to a specific instance of stigmatization experienced by a friend while accessing sexual health care:

> And also the health care worker . . . sometimes they ask very ignorant questions. This is a fact, a true experience from my friend. He said that the doctor asked him, "Why did you have anal sex?" That guy is super straight guy. He doesn't look like me. And the doctor just asked him like that: "Why did you have anal sex?" . . . He never went back to that clinic again. (Interview, community leader)

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The preferred model of clinic services differed in terms of **target clientele**. As many participants preferred a male-only clinic with male health providers as wanted an MSM-specific clinic.

> It could be better to have a men's clinic that would help men to feel more comfortable with male doctor. (Confirmatory FGD participant)

> It's very good service at Peaun Mai drop-in-center . . . people who work there are MSM, so that is why I don't feel shy. (Interview participant)

Experts thought that bisexual and other MSM would prefer a specialized, separate service for MSM or to have sexually diverse health care workers. However, 2 experts suggested that the employment of predominantly kathoey staff at Peuan Mai (see Table 1) was a barrier to bisexual men because it encouraged the perception that the service was only for kathoey:

> If I am the bisexual man or very straight gay man, I don't even know where I can obtain the service, the appropriate service. If I go to Peuan Mai center . . . I see a bunch of kathoey. I don't feel comfortable there . . . They only know about how to treat kathoey or transgender. (Interview, community leader)

Health-System Factors (Availability and Adequacy). A barrier to sexual health care most commonly mentioned by experts, and to a lesser extent by bisexual men, was lack of **comprehensive services**. Many services only offer STI management or HIV testing, necessitating multiple visits to access complete sexual health care.

> I want to have specific center because now there is only place which provides counseling, but when it comes to treatment, we still have to go to hospital or clinic. (FGD participant)

Experts described the appeal of a "one-stop shop" to avoid the need for ongoing referrals and prevent loss to follow-up.

> And also we cannot treat them, treat any disease. Just testing, and counseling. People expect this place to be a one-stop service. (Interview, outreach worker, specialized health service)

In support of this notion, participants who accessed HIV testing through Peuan Mai, which only provides HIV testing (see Table 1), had not sought other sexual health care.

> I play around, and I was worried that I was infected with some STI or HIV, so I went to check my health. I have a friend who is a peer educator; he suggested I visit Peuan Mai drop-in-center. I regularly have an HIV test when I feel worried, but I don't access other health check. (Interview participant)

Some FGD participants favored **integrated HIV testing and management**, although 1 expert thought that a MSM-specialist clinic's location within Setthathirath Hospital (see Table 1) discouraged access. The MSM-clinic is attached to a general clinic for HIV and tuberculosis patients, and thus attendees may be confronted by patients who appear sick or have advanced HIV. The expert suggested this perpetuates fear and is particularly intimidating for MSM with low knowledge of HIV:

> . . . some people might not feel comfortable to go there because mostly it looks like a treatment center for positive people. And when you go there you feel like you're positive. (Interview, community leader)

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Participants wanting to protect their anonymity favored a **private** location separate from other services or in a "hidden place."

> Private room or place and don't want others to see. (FGD participant)

> Separate STI services from other department at hospital. (Interview participant)

Service **quality** was important to participants. Two men wanted the doctors and nurses to have excellent clinical knowledge as well as good management skills. Experts mirrored these views, calling for better service systems and management, more health personnel at testing centers, ongoing training opportunities, and specific training in providing appropriate and sensitive sexual health services to sexual minorities.

Numerous bisexual men wanted greater emphasis on **counseling** on treatment, prevention, and issues pertinent to people in same-sex relationships as part of sexual health consultations.

> If they go to general hospital, doctors only give drugs but they don't give much advice. But the most important thing is discussion and reassurance; providing us with information on how to protect ourselves in the future and how to solve problems. (Interview participant)

Many experts highlighted the lack of clarity or functioning **referral system** for HIV and sexual health care in Laos, weakening the overall response to HIV. Men might be sent to multiple clinics in pursuit of a particular service.

> And even the doctor might [be] like, . . . "I'm not sure, maybe you should go there." And always advise them to go to the middle of nowhere. "Maybe you go to the CHAS [Centre of HIV/AIDS/STIs]." And CHAS says, "oh lets go to Settha [Setthathirath] hospital," or "let's go to Peuan Mai," or lets go there. So it's not very clear. (Interview, community leader)

An improved referral system was identified as a key service need. Some experts thought that the referral pathways should accommodate varying needs and acceptability based on same-sex sexual behavior and sexual and gender identity.

An expert working at a specialized service voiced concern over **supplies**, including treatment stock outs and lack of specialized **equipment** for testing and diagnoses.

Accessibility and Convenience. Participants commonly noted accessibility problems related to **distance** to sexual health services, either within Vientiane or from rural and provincial areas. For many participants a convenient location was a key determinant when choosing a clinic.

Experts also mentioned geographical constraints in terms of distribution of services specialized in or sensitive to the needs of sexually diverse populations and the distance to centers providing antiretroviral therapy (ART). While this study focused on health care access in Vientiane, numerous experts referred to geographical barriers for men residing in rural settings.

There was high demand for clinics offering quick service. Participants were discouraged by **long waiting times** and **crowded** services, with numerous men choosing less busy private clinics over hospitals, even if the clinic was less comprehensive:

> They will go there [to a private clinic] more than the hospital because it's near their house and it's not crowded. It's easy to talk and will go to hospital only when doctor at clinic suggests to go there. If there's no suggestion then will treat there at clinic and won't go to a place where there are many people and it's crowded and difficult. (FGD participant)

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Few participants mentioned **cost** of services as a barrier to access, but many said that services should be cheaper or that they would get tested if it were free; these participants may be unaware that HIV testing and ART in Laos is already free and that least 2 clinics offer free testing for STIs.

Several experts thought that **cost** affected health-seeking behavior through direct costs, such as service and treatment, and indirect costs, such as transport. STI testing is charged to the patient at most clinics, as are STI treatments.

> And there some cases that they call in first, ask if this place offers them or provide them free medicine, drugs. And we don't have it so they don't come here once they know that. (Interview, nurse, specialized health service)

Bisexual men proposed **Internet and telephone** hotlines as ways of increasing access to sexual health information and counseling. These were appealing for the anonymity and privacy they offer.

> Talking on the phone, not seeing each other's face is more comfortable; it's private. (FGD participant)

> Or create website to offer information . . . because these days there are many people using the internet. Want to have a center, hotline number, chat blog, a place where people can access information about any diseases, like how you get infected, [how to] prevent [disease], and symptoms. These can make people know more and protect [themselves] more. (FGD participant)

To improve accessibility, some experts suggested **community-based testing**, such as mobile testing services and community-based, decentralized testing and ART.

Discussion

Behaviorally bisexual men in this study commonly described engaging in high-risk behaviors, highlighting their need for regular HIV and STI testing. Despite this, utilization of sexual health care services was low and limited to occasional HIV testing among some men, and treatment of symptomatic STIs among others. Results suggest that interventions targeting individuals as well as service-level and structural determinants are necessary to improve health care access among bisexual men in Laos. Poor knowledge and misinformation on existing services were major barriers to participants accessing available sexual health services in Vientiane. Other identified barriers, such as shyness, privacy and confidentiality concerns, and inconvenience were similar to those of female sex workers and the general community in Laos.[24,25] While social stigmatization appears common to all groups seeking sexual health care, bisexual men face additional stigmatization for their sexual orientation. Themes such as acceptability, accessibility and health system factors (availability and adequacy) are reciprocated in other theories of health care access,[23,26] demonstrating the commonality of these factors to diverse populations and settings, as well as to health care seeking for both screening and diagnostic purposes.

Our results highlight the need for health promotion interventions to increase demand for testing. Consistent with psychosocial models of behavior change, targeted education is needed to improve HIV treatment literacy, convey that HIV and STIs can be asymptomatic, increase understanding of sexual risk, portray the benefits of regular testing, and correct misperceived barriers.[27-29] While these themes refer to individual factors, structural factors also influence demand for testing. Participants and experts emphasized the importance of promoting and advertising existing HIV and sexual health services as a simple way to promote uptake. However, experts identified restrictions on disseminating information specific to MSM, and higher level governmental support is needed to make it freely available.

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Findings indicate a need to better integrate HIV and STI services to ensure men are getting comprehensive health care and to reduce the need to access multiple clinics for sexual health needs. STI screening and treatment are key components of HIV prevention strategy,[2] and integrating HIV and STI services may enable better use of resources and maximize health and prevention benefits. STIs such as chlamydia are often asymptomatic,[30-33] and if left untreated, can be transmitted to sexual partners and increase HIV infection risk.[34] Most participants mistakenly believed that only experiencing symptoms warranted seeking sexual health care. Although syndromic management of STIs is often the mainstay practice in resource-limited settings,[35,36] this approach misses infections, and in Vientiane STI testing is available at numerous services, including some sensitive or specific to MSM.[34] STI prevalence is high among MSM, female sex workers, and kathoey in Laos,[8,37,38] and given reports of condomless sex with all of these groups, is probably high among bisexual men. Lao hospitals and clinics must develop the capacity to routinely offer asymptomatic STI screens, but the availability of suitable technology remains a limiting factor.

Worldwide, sexual stigma has been associated with reduced access to HIV services.[39] Although stigma and discrimination of male-to-male sex in Laos is not as widespread, systematic, or oppressive as in some other Asian countries,[40] experts still portrayed stigma as a major barrier to bisexual men accessing sexual health care, and participants anticipated negative attitudes from clinic staff toward their sexual orientation, sexual behavior, or health status. Stigma may prevent men fully disclosing their sexual behavior or orientation to health care providers, leading to improper care and inadequate advice and counseling.[13,41-44] Participants' preference for sexual health care to be delivered through MSM-specific services, men's health clinics, or mainstream services varied, likely reflecting the variation in the sexuality and identity of bisexual men in Laos, and multiple approaches are required. Improving the capacity of mainstream health care providers to offer appropriate, sensitive and friendly sexual health care to sexual minorities may help expand access, but other barriers, such as efficiency of service, friendliness, and confidentiality, should also be addressed.[45] Providers and the community need advocacy and training to reduce homophobic attitudes, normalize sexual health and conversations around sexual behavior, and promote STI services as routine health care.[35,39]

Alternative models for promoting uptake of HIV and sexual health services and reducing risk behavior may be appropriate in Laos. First, an approach trialed in Thailand using a free health checkup package may incentivize HIV testing and sexual health care by providing more tangible benefits to young MSM, appealing to interests in health, fitness, and appearance.[46] Second, pharmacists, who prior research indicate often have poor knowledge of STI management and testing,[19,47,48] are frequently the first point of contact for Laos bisexual men. Providing appropriate training and resources to pharmacists may be useful, with further research need to explore the most effective ways of involving them in sexual health care.[49-51] Third, with the increased penetration of internet and 3G smartphone in Laos[52,53] and high acceptability among bisexual men, Internet and mobile phone applications may be appropriate to reach men with high-risk behavior, including those with low engagement with sexual health care.[36] Work in Thailand demonstrates that online communication campaigns can successfully engage MSM in HIV education and increase uptake of HIV and STI testing.[45,54] Mobile testing services may also improve the accessibility of testing and be targeted to areas frequented by bisexual men.[2,45,55]

Our study has several limitations. The majority of the sample were young students, due partly to the ease of recruiting from dormitories compared with bars and nightclubs. Results demonstrate a spectrum of experiences and attitudes relating to sexual health care access and utilization but might not be generalizable to the wider population of bisexual men in Vientiane. Because of to last-minute cancellations and no-shows, FGDs were smaller than intended. However, the intimacy afforded by the smaller groups made it easier to explore issues in greater depth.

In conclusion, we showed that young Lao men with bisexual behavior are an important group to target for HIV prevention and sexual health promotion. We identified low utilization of HIV and sexual health services despite high-risk behaviors. Increased emphasis on comprehensive

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sexual health care, improved promotion of services, and clarification of referral systems are needed to improve health care access and health and prevention benefits.

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Author Contributions

AB designed the study, developed the data collection tools, facilitated key expert interviews, coded and analyzed the data, and drafted and finalized the final manuscript. MH and RP provided technical and intellectual input into the study design, data collection tools, data analysis, and manuscript revision. NP managed participant recruitment and researcher training, assisted with translation, and facilitated all FGDs and participant interviews. PH and VS provided input into the data analysis and manuscript revision. All authors read and approved the final manuscript.

Declaration of Conflicting Interests

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CHARACTERISTICS OF A SEXUAL NETWORK OF BEHAVIORALLY BISEXUAL MEN IN VIENTIANE, LAO PDR, 2010

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Men who have sex with both men and women (behaviorally bisexual men) may be at increased risk of HIV acquisition and transmission due to risky sexual behaviors. We recruited a sexual network comprised of behaviorally bisexual men and their sexual partners in Vientiane, Lao PDR in 2010 to inform our understanding of the potential for HIV transmission among heterosexual, homosexual, and bisexual networks. Participants completed a sexual behavior questionnaire and referred < 5 sexual partners. A total of 298 people were recruited, including 63 behaviorally bisexual men. Behaviorally bisexual men reported riskier sexual behaviors (number of sexual partners in the previous 12 months and consistent condom use) than behaviorally homosexual and heterosexual men. Using social network diagrammatic representation, heterosexual, homosexual, and bisexual networks are shown to be interlinked. This study demonstrates that behaviorally bisexual men are potential key drivers of HIV epidemics and require a targeted approach to sexual health promotion.

Men who have sex with both men and women are an important population group for the control of HIV and other sexually transmitted infections (STIs) in Southeast Asia. Men who have sexual contact with both men and women may sexually link populations that are traditionally considered at high risk for HIV and STIs (such as homosexual or transgendered populations) and low risk populations (such as heterosexual women), and it is hypothesised that HIV and STIs may be transmitted during unprotected sexual contact. Men who have sex with both men and women

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are a diverse population and do not exclusively report bisexual orientation (that is, equal attraction to men and women). Men who do not report bisexual orientation yet have sexual contact with both men and women may do so for a variety of reasons including, but not limited to, opportunity, experimentation, financial gain, peer pressure, and adherence to cultural norms (Hughes et al., 2011; Lyttleton, 2008).

While there is a growing field of research surrounding the behaviors of men who have sex with men in Southeast Asian countries such as Thailand, Vietnam and Lao People's Democratic Republic (Lao PDR) (Bengtsson, Thorson, Thanh, Allebeck, & Popenoe, 2013; Beyrer et al., 1995; Kontula & Haavio-Mannila, 1995; Laumann, Gagnon, Michael, & Michaels, 1994; Sheridan et al., 2009; Smith, Rissel, Richters, Grulich, & de Visser, 2003; Toole et al., 2006; Wellings, Field, Johnson, & Wadsworth, 1994; World Health Organization, 2010), there has been only a narrow scope of exploration into the context and behaviors of men that have sex with both men and women in the region, with Thailand being the primary focus (Li et al., 2009a; van Griensven et al., 2004). Further, there has been limited epidemiological consideration of the role of transgendered (male to female) individuals (commonly known as "kathoey teng ying" or "kathoey phom yao" in Lao PDR and herein referred to as "kathoey") as sexual partners. Given the increased risk for HIV infection among men who have sex with men compared to the general population (Baral, Sifakis, Cleghorn, & Beyrer, 2007) and that men who have sex with men and women link homosexual and heterosexual populations, it is important to gather information on the characteristics and behaviors of these men to identify risk behaviors that place them—and their male, female, and kathoey partners—at risk of HIV and STIs. In addition, this information is essential to inform HIV and STI prevention intervention development and service provision. It is also important to understand the structure and connectedness of sexual networks involving high risk and low risk population groups and to consider network structure in interpreting the epidemiology of HIV and STIs in this setting.

In this study, we sought to address this gap. We undertook a comprehensive exploration of a sexual network of residents of Vientiane, the capital of Lao PDR (population approximately 800,000; United States Central Intelligence Agency, January 10, 2011), with a focus on the partners and behaviors of men who have sex with both men and women to understand how HIV and other sexually transmitted infections may spread from high risk to low risk populations in this setting.

METHODS

STUDY DESIGN AND POPULATION

A cross-sectional sexual behavioral survey was conducted with members of a sexual network in Vientiane, Lao PDR, in 2010. Men who reported sexual contact with both men and women and their sexual partners who resided in Vientiane comprised the study population.

RECRUITMENT AND DATA COLLECTION

Initial participants or "seeds" were men aged 18 years and older who reported bisexual behavior (defined as anal and/or vaginal sexual contact with at least one male and one female) in the previous 12 months. Seeds were selected by convenience sampling purposively for their close linkages with the study population and for diversity of individual attributes (such as sexual orientation and number of partners)

to ensure effective recruitment of a broadly representative study population. Seeds then nominated their sexual partners (defined as a partner with whom they had oral, anal, or vaginal sexual contact during the previous 12 months) for recruitment via restricted snowball sampling, who then nominated their sexual partners, and so on, until the sample size (n = 300) was reached. In all waves of recruitment, participants were restricted to nominating a maximum of five sexual partners. The number of recruits was limited in order to encourage long recruitment chains, which is noted to increase the "reach" of the sample into more hidden pockets of the population and minimize the influence of initial seeds on the final sample composition (Magnani, Sabin, Saidel, & Heckathorn, 2005).

Six trained field researchers recruited participants and obtained informed verbal consent. Interviews were conducted at the field office and various locations, including nightclubs, bars, parks, dormitories, and massage parlors. Participants self-completed a sexual behavior questionnaire using a hand-held computer programmed using Microsoft Visual Studio in either Lao or English language. The questionnaire took approximately 30 minutes to complete. Participants then nominated sexual network partners for recruitment into the study and provided a nickname and contact details; these individuals were then invited to participate in the study. New participants were reimbursed approximately $US2.50. Participants who were nominated and recruited more than once were reimbursed approximately $US1.90 for each subsequent nomination; these participants were not re-interviewed; however, information was collected to include the relevant links on the sexual network diagram.

Data collected included demographic information (including age and educational, marital, and employment status), sexual orientation (men only), information on sexual partners (gender and number of partners), and condom use. Information on drug and alcohol use and HIV knowledge and attitudes was also collected (not reported here). Women completed a modified questionnaire focused more generally on sexual behaviors, so as not to highlight the hypothesis of the study and potentially reveal a male partner's bisexual behavior. Information collected was non-identifiable.

MEASUREMENT AND ANALYSIS

Gender was self-described as female, male, or kathoey. Men described their sexual orientation using the Kinsey Scale, a measure of sexual orientation in which participants report their sexual orientation along a continuum from exclusively heterosexual to exclusively homosexual (Kinsey, Pomeroy, & Martin, 1948; see Table 1). These categories were regrouped as follows: exclusively heterosexual (Kinsey = 0); predominantly heterosexual but incidentally/more than incidentally homosexual (Kinsey = 1 or 2); equally heterosexual and homosexual, bisexual (Kinsey = 3); predominantly homosexual but incidentally/more than incidentally heterosexual (Kinsey = 4 or 5); and exclusively homosexual (Kinsey = 6).

Recent sexual partners was defined as sexual partners in the previous 12 months. The number of recent female, male, and kathoey sexual partners (vaginal and/or anal sexual contact) was used to derive a total number of recent sexual partners.

The sexual behavior of men was described according to three discrete categories, based on the participant ever reporting anal or vaginal sexual contact with female, male, and kathoey partners: (1) behaviorally homosexual (sexual contact with men or kathoey only); (2) behaviorally heterosexual (sexual contact with women only); and (3) behaviorally bisexual (sexual contact with women and either men or kathoey, or both).

TABLE 1. Kinsey Score Description

Scale Number[1]	Description
0	Exclusively heterosexual
1	Predominantly heterosexual, only incidentally homosexual
2	Predominantly heterosexual, but more than incidentally homosexual
3	Equally heterosexual and homosexual; bisexual.
4	Predominantly homosexual, but more than incidentally heterosexual
5	Predominantly homosexual, only incidentally heterosexual
6	Exclusively homosexual

Source: Kinsey et al. (1948). [1]Where appropriate, these categories were regrouped as follows for analysis: exclusively heterosexual (Kinsey = 0); predominantly heterosexual but incidentally/more than incidentally homosexual (Kinsey = 1 or 2); equally heterosexual and homosexual, bisexual (Kinsey = 3); predominantly homosexual but incidentally/more than incidentally heterosexual (Kinsey = 4 or 5); and exclusively homosexual (Kinsey = 6).

Consistent condom use (CCU) was defined as reporting always using a condom during vaginal and/or anal sexual contact for each partner type during the previous 12 months.

STATISTICAL ANALYSIS

Data were analyzed using Stata (Version 11, Stata Corp., College Station, Texas). Data (raw numbers and percentage) were reported for each category stratum for men, women, and kathoey. The median number of recent sexual partners (overall and for specific genders) and the percentage of participants reporting CCU (by partners' gender) were calculated. The Kruskal-Wallis test was used to determine if there was a statistical difference between the median number of lifetime partners of behaviorally bisexual, heterosexual, and homosexual men, women, and kathoey ($p < 0.05$). Chi-squared tests were used to determine if there was a difference in a range of demographic variables and CCU between men, women, and kathoey ($p < 0.05$).

SEXUAL NETWORK DIAGRAMMATIC REPRESENTATION

UCINET 6 for Windows and NetDraw were used to graphically map the structure of the participants' sexual networks and to calculate descriptive statistics of recruitment diagnostics (number of networks, size of network).

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Alfred Hospital Ethics Committee, the Ethical Review Committee of the Australian National University, the National Ethical Committee for Health Research, Ministry of Health, Lao PDR, and the University of Health Sciences, Lao PDR.

RESULTS

RECRUITMENT AND PARTICIPATION

Ten seeds were recruited in Vientiane between June and October 2010. The ten seeds recruited 45 partners (wave one), who then nominated 148 recruited partners (wave two), who then nominated 95 recruited partners (wave three) (see Figure 2 for recruitment matrix). A total of 298 people were successfully recruited from a total of 342 nominated sexual partners (total participation rate = 87%). Reasons for non-participation included non-contactable (n = 17, 32%), refusal (n = 9, 17%),

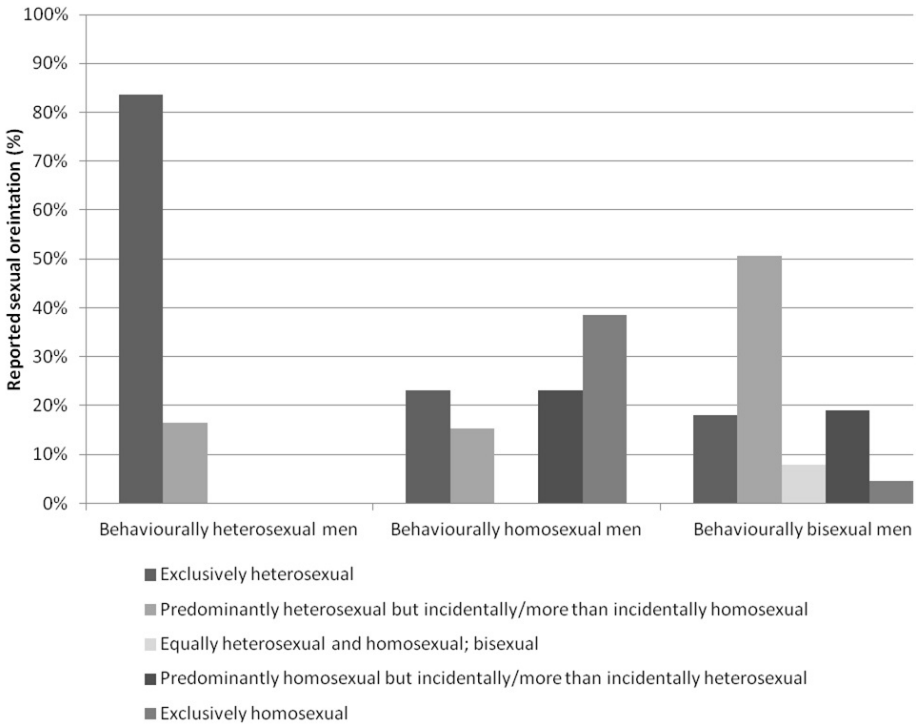

FIGURE 1. Reported sexual orientation of behaviorally heterosexual (n = 85), homosexual (n =13) and bisexual (n = 89) men

participant requested sexual partner not be contacted (n = 15, 28%), and underage at the time of the survey (n = 3, 6%).

DESCRIPTION OF PARTICIPANTS

Men comprised the majority of the sample (n = 189, 63%; Table 2). Approximately 50% of the sample were aged 18–21 years (56% of women, 46% of men, 44% of kathoey; median age = 22 years). The sample reported a high level of education, with significantly more men reporting post-secondary education (76%) than women (69%) and kathoey (72%). Around half of the sample was originally from Vientiane (61% of women, 47% of men, 56% of kathoey). While women and kathoey most commonly reported living with their parents (49% and 40% respectively), the most common living arrangement for men was a shared room or dormitory (40%). Over 50% of women and men reported not currently being employed, among which 65% and 78% reported being students, respectively. Among participants who reported working, the most common employment setting was in an office (12% among women; 16% among men; 16% among kathoey).

SEXUAL ORIENTATION AND BEHAVIORS

Sexual Orientation of Men. Almost half of all men (n = 90, 48%) reported exclusively heterosexual orientation (Kinsey = 0), and there was a decrease in the proportion of men self-identifying for each increment along the Kinsey scale (predominantly

TABLE 2. Description of Participants

	Women *n* (%)	Men *n* (%)	Kathoey I (%)
Total participants	84 (100)	189 (100)	25 (100)
Age (median)			
18–21 years	47 (56)	87 (46)	11 (44)
22 years +	37 (44)	102 (54)	14 (56)
Highest level of education			
Primary	2 (2)	0 (0)	2 (8)
Lower secondary	1 (1)	6 (3)	1 (4)
Upper secondary	23 (27)	40 (21)	4 (16)
Higher	58 69)	143 (76)	18 (72)
Originally from Vientiane			
No	33 (39)	101 (53)	11 (44)
Yes	51 (61)	88 (47)	14 (56)
Living arrangements			
Live with parents	41 (49)	70 (37)	10 (40)
Live with a relative (brother, sister, aunt, etc.)	23 (26)	28 (15)	5 (20)
Live alone	1 (1)	5 (3)	1 (4)
Live with partner	4 (5)	6 (3)	0 (0)
Share room/dormitory	15 (18)	76 (40)	8 (32)
Other	0 (0)	4 (2)	1 (4)
Marital status			
Single (never married)	81 (96)	180 (95)	25 (100)
Married	3 (4)	8 (4)	0 (0)
Separated or divorced	0 (0)	1 (1)	0 (0)
Children			
Doesn't have children	82 (98)	180 (95)	24 (96)
Has children	2 (2)	9 (5)	1 (4)
Workplace			
School/university	0 (0)	3 (2)	1 (4)
Office	10 (12)	30 (16)	4 (16)
Construction site	0 (0)	4 (2)	0 (0)
Beauty salon	6 (7)	0 (0)	2 (8)
Massage parlor/sauna	0 (0)	2 (1)	0 (0)
Shop	7 (8)	8 (4)	3 (12)
Restaurant	2 (2)	8 (4)	0 (0)
Cafe	0 (0)	1 (1)	0 (0)
Bar/nightclub/pub	1 (1)	6 (3)	1 (4)
Beer shop/beer hall	3 (4)	4 (2)	1 (4)
Hotel	0 (0)	5 (3)	0 (0)
Home	3(4)	7 (4)	2 (8)
Not working	52 (62)	111 (59)	11 (44)
Student			
Yes	43 (51)	119 (63)	16 (64)
No	41 (49)	70 (37)	9 (36)

heterosexual but incidentally/more than incidentally homosexual = 32%; equally heterosexual and homosexual, bisexual = 4%; predominantly homosexual but incidentally/more than incidentally heterosexual = 10%; exclusively homosexual = 5%).

Gender of Men's Sexual Partners. Just fewer than half of men (n = 85, 45%) reported anal or vaginal sexual contact with only women during their lifetime and are referred to as behaviorally heterosexual men. A similar number of men (n = 89, 47%) reported anal and/or vaginal sexual contact with women and either men or kathoey, or both, during their lifetime and are referred to as behaviorally bisexual men. Less than 10% (n = 13, 7%) reported anal sexual contact with men and/or kathoey only and are referred to as behaviorally homosexual men. The behavior

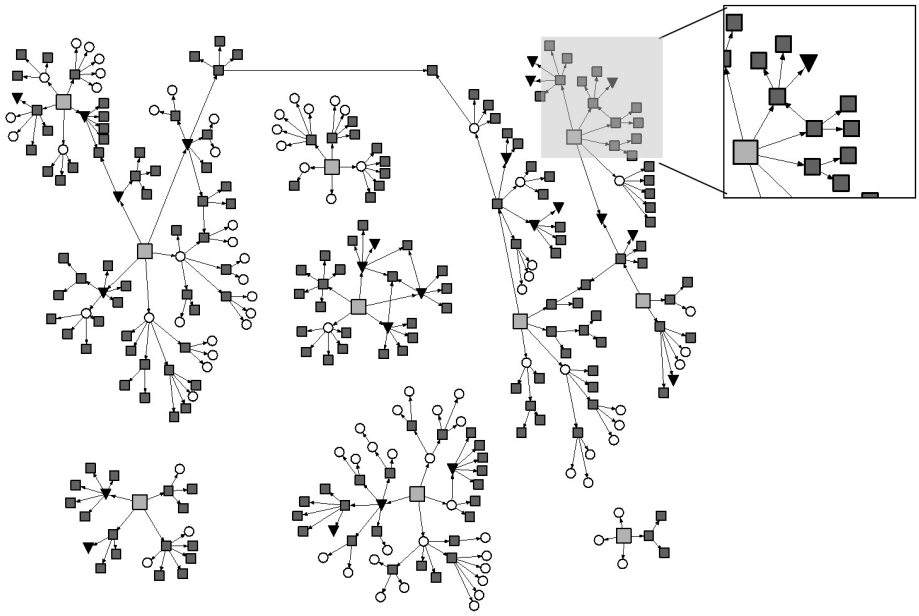

FIGURE 2. Sexual network of participants. Inset diagram demonstrates an example of a participant nominated by more than one participant

of two men could not be determined using the derived variables used to categorize men's sexual behavior.

Sexual Orientation Versus Behavior of Men. The sexual orientation of behaviorally heterosexual, homosexual, and bisexual men varied (Figure 1). Among behaviorally heterosexual men (n = 85), all reported exclusive or predominant heterosexual orientation. Among behaviorally homosexual men (n = 13), the majority (n = 8, 62%) reported exclusive or predominant homosexual orientation with a small but important number (n = 5, 38%) reporting exclusive or predominant heterosexual orientation. Among men who reported bisexual behavior (n = 89), the majority (n = 61, 69%) reported exclusive or predominant heterosexual orientation. That is, despite reporting sexual attraction only or mainly to women, they have had sexual contact with both men and women.

Number of Partners. The number of recent sexual partners varied across the sample (Table 3). Overall, behaviorally bisexual men reported the greatest number of recent sexual partners (median = 8, range = 1–99) compared to behaviorally heterosexual men (median = 3, range = 1–10) or behaviorally homosexual men (median = 3, range 2–12). Women reported a median of three recent sexual partners (range = 1–20). Kathoey reported a similar median number of recent partners to behaviorally bisexual men (median = 7, range = 1–70). There was a statistically significant difference in the median total number of recent sexual partners reported between behaviorally homosexual, heterosexual, and bisexual men, women, and kathoey ($p < 0.001$).

TABLE 3. Key Indicators for Sexual Risk Behaviors Among All Participants

	Any sexual partner reported in previous 12 months[1]		Number of sexual partners in previous year[1,3]		CCU[2,3]	
	n	%	Median	Range	*n*	%
Female participants (*n* = 84)						
Male sexual partners[4,5,7]	82	98	3	1–20	14	17
Male participants						
Behaviorally heterosexual (*n* = 85)						
All sexual partners[5,7]	82	96	3	1–10	27	33
Female sexual partners	82	96	3	1–10	27	33
Male sexual partners	0	0	NA	NA	NA	NA
Kathoey sexual partners	0	0	NA	NA	NA	NA
Behaviorally homosexual (*n* = 13)						
All sexual partners[5,7]	8	62	3	2–12	3	38
Female sexual partners	0	0	NA	NA	NA	NA
Male sexual partners	8	62	3	1–10	3	38
Kathoey sexual partners	2	15	2	2–2	2	100
Behaviorally bisexual (*n* = 89)						
All sexual partners[5,7]	88	99	8	1–99	12	14
Female sexual partners[6]	78	95	5	1–58	16	21
Male sexual partners	54	61	5	1–72	10	19
Kathoey sexual partners	49	55	3	2–10	15	31
Kathoey participants (*n* = 25)						
All sexual partners[5,7]	20	83	7	1–70	5	25
Female sexual partners[6]	2	9	1.5	1–2	1	50
Male sexual partners	20	80	6	1–70	5	25
Kathoey sexual partners	0	0	NA	NA	NA	NA

[1]*Sexual partners* refer to anal or vaginal sexual partners reported in the previous 12 months.
[2] *Consistent condom use* (CCU) defined as reporting always using a condom during vaginal and/or anal sexual contact for each partner type during the previous 12 months.
[3]Median, range of number of sexual partners and CCU among those reporting at least one of sexual partner gender in previous 12 months.
[4]Only female participants asked about male sexual partners.
[5]Kruskal-Wallis test for differences in the median total number of sexual partners reported in past 12 months: $p < 0.001$.
[6]Missing data on female sexual partners for 7 behaviorally bisexual men and 3 kathoey participants.
[7]Chi square test for difference in reported levels of CCU with all partners between behaviorally heterosexual, homosexual and bisexual men, kathoey, and females: $p = 0.02$.
NA – not applicable (nil of partner type reported).

Condom Use. Reported levels of CCU were low across the sample (Table 3). CCU with all partners was reported by 33% of behaviorally heterosexual men, 38% of behaviorally homosexual men, 14% of behaviorally bisexual men, 25% of kathoey, and 17% of females ($p = 0.02$). Among behaviorally bisexual men, CCU ranged from 19% with male partners to 31% with kathoey partners.

SEXUAL NETWORK DIAGRAMMATIC REPRESENTATION

The sexual network diagrammatic representation of the 298 participants of this study shows that there were five discrete sexual networks, ranging in size from 7 to 176 individuals (see Figure 2).

DISCUSSION

This is the first study conducted in Lao PDR to examine differences in sexual behaviors and orientation between behaviorally heterosexual, homosexual, and bisexual men, and one of the few studies internationally to also compare the sexual behaviors of these men with women (Glick et al., 2012). The findings suggest that sexual orientation does not always correlate with sexual behavior, and vice versa. Importantly, we found that over two-thirds (69%) of behaviorally bisexual men reported either exclusively or predominantly heterosexual orientation.

It is outside the scope of this paper to fully explore the reasons for this divergence; however, as has been described in earlier qualitative research conducted in Lao PDR (Lyttleton, 2008), it is possible that these men are in regular partnerships with women, but had occasional sexual contact with men for various reasons, including opportunity, experimentation, financial gain, or peer pressure. Further, few men who reported bisexual behavior reported bisexual orientation, with only 8% of all behaviorally bisexual men reporting equal attraction to men and women. We also found that approximately one-quarter (23%) of behaviorally bisexual men reported exclusive or predominant homosexual orientation. Again, while the scope of this paper is unable to fully explore this finding, it is possible that these men had sexual contact with women in order to conform to social norms or peer pressure (Lyttleton, 2008). Nevertheless, these findings are important as they allude to the diversity of sexuality and sexual behavior in Lao PDR and juxtapose the divergence between sexual orientation and sexual behavior in this setting. These findings have important implications when developing sexual health promotion programs for behaviorally bisexual men. It needs to be recognized that men who engage in high-risk behaviors may not identify according to their sexual behavior and may be missed by traditional sexual health promotion interventions targeting homosexual-identifying or bisexual-identifying individuals. This highlights a challenge for organizations and programs working in the region that undertake sexual health promotion, outreach, and peer education. They need to recognize this diversity and utilize a range of strategies and messages to effectively target all men that may engage in high-risk sexual behaviors.

Another important result is that behaviorally bisexual men are highly sexually active with low rates of CCU. Behaviorally bisexual men had a greater number of recent sexual partners than behaviorally homosexual or heterosexual men, women, or kathoey. These findings are particularly important given the low levels of reported CCU with this group of men. Behaviorally bisexual men reported lower rates of CCU with female partners than behaviorally heterosexual men and lower rates of CCU with male partners than behaviorally homosexual men. These low levels of CCU highlight the potential for these men to act as a link for HIV and other STI transmission from high-risk to low-risk populations in Lao PDR and further underscores the importance for health promotion strategies to effectively target and increase safe sex behaviors with this group. Other studies in the Asian setting (Phillips et al., 2010), particularly China (Chow, Wilson, & Zhang, 2011; E. Chow, Wilson, & Zhang, 2012), have also highlighted the potential for behaviorally bisexual men to act as a bridge of HIV transmission, although there are no current studies supporting this as a major source of HIV transmission. In some settings, HIV prevalence among men who have sex with men and women is lower than among men who have sex with men only (Li et al., 2009b) and the number of sex acts between behaviorally bisexual men and their female partners low (Chow et al., 2012), which may help

reduce the risk of bridging. Nonetheless, our study demonstrates clear links between behaviorally homosexual and bisexual men, and reports on high numbers of both male and female partners.

While behaviorally homosexual and bisexual men had the lowest levels of CCU, the overall level of CCU was low across the sample—and lower than has been reported for similar populations in Thailand (Chemnasiri et al., 2010; Li et al., 2009a). The comparison of levels of CCU between Lao PDR and Thailand is important given cultural similarities between the two countries. The striking difference in levels of CCU and the low levels reported across the sample highlight the need for an increase in both generalized and targeted condom education, awareness, and availability in Lao PDR, targeting both behaviorally bisexual and homosexual men and the general population more broadly.

The structure of sexual networks has the potential to play an important role in the spread of HIV and STIs (Friedman & Aral, 2001). Transmission of infection through a population occurs as a function of intimate and complex social interactions; an individual's risk of contracting an infection depends not only on the individual's personal characteristics and behavior, but also on those of his or her partners, and of the partners of those partners, and so on (Koopman, 2004). Our sexual network diagrammatic representation clearly demonstrates the interlinked nature of sexual networks in Vientiane, Lao PDR. Homosexual and heterosexual sexual networks are not mutually exclusive, with behaviorally bisexual men linking these different sexual networks. This evidence of the role of behaviorally bisexual in linking sexual networks, coupled with the higher rates of risky sexual behavior reported by this sub-population, is particularly concerning.

To our knowledge, this is the first epidemiological and social network study of its kind to consider a third gender in a Southeast Asian setting, and to explore sexual behavioral differences between women, men, and kathoey. Some classifications of higher-risk behavioral groups have included transgendered people (including kathoey) in the overarching "men who have sex with men" grouping, alongside homosexual and bisexual men as well as other sub-populations such as male sex workers (Lyttleton, 2008). Lyttleton notes the complexity of kathoey as a catch-all term that depicts gender identity, sexual orientation, and social category with a long history in local Thai, Cambodian, and Lao cultures (Lyttleton, 2008), and such classifications may mask important behavioral differences. Our findings suggest that in settings where transgendered populations are culturally accepted, such as in Southeast Asia, the inclusion of kathoey as a third gender for the purposes of public health research allows for differences in behaviors and characteristics to emerge and be explored, and potentially offers new and important insights that will have an impact on HIV and STI transmission. Our findings highlight that kathoey reported only slightly higher levels of CCU than behaviorally bisexual men, suggesting a need for enhanced peer education and other health promotion strategies that target kathoey to effectively enable positive behavior change. Given the dearth of information about the sexual health and behaviors of kathoey in Lao PDR, it would be warranted for future social research to explore the social and cultural determinants of sexual health among kathoey in Lao PDR.

LIMITATIONS

This study has some limitations that are important to consider when interpreting the findings. The findings are not representative of the broader population in Vientiane. The findings clearly demonstrate that there are pockets of heterosexual,

homosexual, and bisexual networks that exist in Vientiane; however, this sample is a subset of a broader sexually active population. Nonetheless, the recruited sample is an underestimate of the true sexual network, as participants were limited to nominating a maximum of five sexual partners. It is also possible that participants were biased in their recruitment towards non-regular female and male and kathoey partners for fear of disclosure of bisexual behavior. We note that women completed a modified questionnaire that did not explicitly reveal the hypothesis of this study; nonetheless, the gender of partners recruited is likely to be representative of the participants' broader sexual activity. The recruitment strategy of snowball sampling had limitations as a non-probability sampling method, and as such, data gathered via this method cannot be confidently generalized to be representative of the broader population. However, leading researchers in this field have stated that snowball sampling can provide useful data for formative research, and here we have presented sample characteristics only and not calculated population estimates (Magnani et al., 2005). Recall bias may have been introduced through the collection of a range of behaviors over a twelve-month period; however, given the use of a Likert scale for the collection of several behavioral measures, this bias is likely to be minimal.

Despite these limitations, the data clearly show the interconnectedness of homosexual, heterosexual, and bisexual sexual networks in Vientiane; the complexities of targeting behaviorally bisexual men; and the riskier sexual behaviors reported by behaviorally bisexual men compared to other men and women and kathoey. It is important that these findings are translated into policy and practice to ensure that the sexual health of behaviorally bisexual men and their partners is promoted.

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Risk and sexual health of behaviourally bisexual men in Vientiane, Laos

POLICY BRIEF 1 APRIL 2015

Improving access to sexual health information among bisexual men in Vientiane, Laos

Key messages

- Behaviourally bisexual men are engaging in high risk behaviours and have incomplete knowledge of HIV risk and sexual health.
- Misperceptions about HIV and STIs are common.
- School-based sex education is inadequate, and many participants learnt about sex through porn, friends and popular media.
- The emphasis on STI symptoms in health promotion brochures may encourage the belief that STIs are always symptomatic.
- Information on risks associated with anal sex should be provided more broadly to young men.

Men with bisexual behaviour are an important group to reach in HIV and sexual health programs. A comprehensive approach to the content and dissemination of sexual health promotion is needed to provide behaviourally bisexual men with accurate, relevant and easily accessible information on HIV and sexual health.

Background

Burnet Institute conducted a qualitative study to explore the influences on risk behaviour and opportunities to improve the health of behaviourally bisexual men in Vientiane. Here we discuss findings on knowledge of HIV and sexually transmitted infections (STIs), access to information, and implications for health promotion.

In Laos, men who have sex with men (MSM) are disproportionately affected by HIV (prevalence of 5.6% compared to 0.2% in the general population).[1] Men with bisexual behaviour are an important subgroup of MSM when considering sexual health risk and HIV prevention: bisexual behaviour among men is relatively common in Laos, and behaviourally bisexual men report high risk behaviours, including low rates of consistent condom use and multiple sexual partners.[2,3]

Behaviourally bisexual men commonly identify as being heterosexual or "straight",[2] and thus may be harder to identify and reach for HIV prevention outreach, education, and health services. For example, in 2010 a study^ of behaviourally bisexual men and their sexual partners in Vientiane[#] found that while HIV knowledge was generally high, heterosexual-identifying bisexual men had lower knowledge than those who were bisexual/homosexual-identifying.[2] Limited access to information targeting MSM may prevent access to information relevant to this group, and lower knowledge of the risks of anal sex among heterosexual-identifying bisexual men was observed.

Behaviourally bisexual men are men who have sex with men and/or male-to-female transgender people and women. They commonly identify as *phu sai tae* or "straight".

Study Methods

From mid-2013 to 2014, focus groups and in-depth interviews were conducted with behaviourally bisexual men (reported ever having anal or oral sex with men and/or male-to-female transgender people, and reported ever having anal or vaginal sex with women) in Vientiane, Laos. Participants were recruited from bars, beer shops, nightclubs, university dormitories, and through peer referral. In addition, key experts were interviewed from health services, local and international non-governmental organisations, government, and community. Participating behaviourally bisexual men ranged in age from 18 to 35 years. The majority were currently studying and described their sexual identity as "man" or "straight".

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Risk and sexual health of behaviourally bisexual men in Vientiane, Laos

POLICY BRIEF 1 APRIL 2015

Key findings

Sexual health knowledge

Common misperceptions were that STIs and HIV are always symptomatic and that withdrawing before ejaculation prevents disease and pregnancy. Men also thought that you only needed to get tested if you had symptoms. Men's understanding of risk associated with anal sex and positioning during anal sex varied.

Men portrayed HIV as a death sentence. This may be influenced by the tone of previous health promotion messages. In addition, due to low testing rates and subsequent delayed diagnoses, men may only be familiar with people who have been diagnosed with late-stage HIV infection and thus have poorer health outcomes.

Sources of information

Men most commonly reported learning about HIV and sexual health from school, village outreach, peer educators, TV and radio, and friends. Despite school being one of the main sources of information, both participants and key experts thought that the information provided through school is insufficient and not always relevant to men who have sex with men.

Men reported learning about sex through pornography, TV/movies, friends, and by themselves. Learning about sex through porn and popular media may create unrealistic expectations of sex, and condom use is also rarely featured in these media.

Barriers to access

Many men said they had inadequate information on prevention and sexual health. Key experts considered it harder to reach behaviourally bisexual or "straight MSM" through peer education and other health promotion. In addition, many key experts thought that health promotion through popular media and entertainment venues is lacking.

Restrictions imposed on promoting information or services relevant to MSM except to highly targeted groups may limit access to information among bisexual men identifying as straight. Access to health education may also be impaired by geographical remoteness, mobility of migrant populations, and a lack of specific social spaces to target gay and bisexual men.

Opportunities to improve access

The majority of behaviourally bisexual men reported using mobile phone and web technology such as Facebook, WeChat, and Skype for meeting sex partners, arranging casual sex, and social purposes. Men also reported using the internet to watch porn. Bisexual men requested access to discrete and anonymous information and counselling through websites and telephone hotlines.

Recommendations

Review and update materials and health promotion strategy for HIV and sexual health, considering the following:

Content

- Avoid using graphic images of complicated STIs and emphasising symptoms in health promotion materials, and instead highlight that STIs and HIV are often asymptomatic;
- Avoid negative and fear-inducing language. Promote HIV as a manageable disease and raise awareness of the benefits of early diagnosis and treatment to both the individual and prevention;
- Promote regular HIV and STI testing for key populations, including men with bisexual behaviour; and
- Incorporate practical information on sexual health and HIV testing clinics, such as location, opening hours, costs and services.

Dissemination

- Advocate for health promotion content relevant to MSM, such as the risks of unprotected anal sex and MSM-friendly services, to be distributed more widely, not just to known MSM;
- Expand settings for health promotion to include universities & colleges, dormitories, pharmacies, bars, nightclubs and private clinics;
- Utilise information and communication technologies as a platform for health promotion delivery, including websites, social media and phone apps. Websites could be used for static exchange of information or interactive services; and
- Advocate for training and curriculum development supporting comprehensive sex education in all schools.

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Risk and sexual health of behaviourally bisexual men in Vientiane, Laos

POLICY BRIEF 2 APRIL 2015

High sexual risk and low HIV testing among bisexual men in Vientiane, Laos

Key messages

- Behaviourally bisexual men are engaging in risk behaviours and should be regularly testing for HIV and STIs.
- Despite this, most of these men do not access HIV testing and have never been tested for STIs.
- Barriers to seeking health care are: confidentiality, location, waiting time, privacy and cost.
- Comprehensive sexual health care requires clinics to provide both HIV and STI services.
- Men have limited and inaccurate knowledge of available services and clinics.
- Delayed testing and subsequent treatment can lead to poorer health outcomes and this can compound fear of HIV.

Behaviourally bisexual men have low engagement in HIV and STI testing, with potential detrimental effects on the health and wellbeing of themselves, partners, and community.

Background

Burnet Institute conducted a qualitative study to explore the individual, sociocultural and structural influences on risk behaviour and health-care seeking among behaviourally bisexual men in Vientiane.

In Laos, men who have sex with men (MSM) are disproportionately affected by HIV (prevalence of 5.6% compared to 0.2% in the general population in 2007),[1] and STI prevalence is high. For example, in Luang Prabang (2009) 9% of MSM had rectal chlamydia and/or gonorrhoea.[2] Men with bisexual behaviour are an important subgroup of MSM when considering sexual health risk and access to HIV prevention services: bisexual behaviour among men is relatively common in Laos; behaviourally bisexual men report high risk behaviours, including low rates of consistent condom use and multiple sexual partners;[3,4] and behaviourally bisexual men commonly identify as being heterosexual,[4] and thus may be harder to identify and reach for HIV prevention and health services.

Men engaging in high-risk behaviours should ideally be regularly testing for HIV and sexually transmitted infections (STIs) in order to ensure early detection and treatment and to prevent ongoing transmission.[5-7] The Lao National Strategy and Action Plan on HIV/AIDS has a target of 80% HIV testing coverage among key populations,[8] but previous studies report that only 6.3% of MSM in Vientiane had a prior HIV test[1] and 16% of MSM in Luang Prabang had tested for HIV in the past year.[2] STIs are often asymptomatic, so regular STI testing is the only way to detect infection, reduce health effects, and prevent transmission to other partners. Infection with some STIs can increase the transmission of HIV, and thus STI management is an important component of HIV prevention.

Behaviourally bisexual men are men who have sex with men and/or male-to-female transgender people and women. They commonly identify as *phu sai tae* or "straight".

Study Methods

From mid-2013 to 2014, focus groups and in-depth interviews were conducted with behaviourally bisexual men (reported ever having anal or oral sex with men and/or male-to-female transgender people, and reported ever having anal or vaginal sex with women) in Vientiane, Laos. Participants were recruited from bars, beer shops, nightclubs, university dormitories, and through peer referral. In addition, key experts were interviewed from health services, local and international non-governmental organisations, government, and community. The majority of participants were students and aged 18-35 years.

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Risk and sexual health of behaviourally bisexual men in Vientiane, Laos

POLICY BRIEF 2 APRIL 2015

Key findings

Risky behaviour

Participants frequently reported condomless sex, multiple sex partners and concurrent relationships, both buying and selling sex, and initiating sex when drunk.

Low uptake of sexual health services

Despite high risk, a minority of participants reported ever testing for HIV and none had ever been tested for STIs. Men preferred to seek advice from friends or self-treat with drugs bought from a pharmacy, or use traditional medicine.

Men expected to experience symptoms if they were infected with HIV or STIs, and did not perceive a need to access healthcare otherwise. However, numerous men reported having had general health checks, which suggests some amenability to health screens.

Barriers to testing

The majority of participants had limited to no knowledge on what sexual health/HIV services are available or where they are located. Misinformation was common; for example, many men in this study reported that they would get tested if it was free, but HIV testing in Laos is already free of charge, and at least two clinics also offer free testing for STIs. Confidentiality was a widespread concern, but already three services offering MSM-friendly services provide anonymous HIV testing and counselling. Participants and key experts frequently mentioned the need for increased promotion of health services.

Many men avoided HIV testing because of fear of knowing their HIV status, and they associated HIV with death. Men also reported being too shy to access care or testing and were concerned about confidentiality, privacy, crowded services and judgement from healthcare workers. Key experts commonly expressed concern that stigma discourages bisexual men from seeking sexual healthcare.

Some sexual health clinics lack comprehensive care, offering either HIV testing *or* STI testing/management. This requires men to access numerous clinics to receive all services and increases likelihood of loss to follow up. Further, key experts noted that there is not a clear referral system, and patients are sometimes referred to inappropriate services.

Preferences for sexual health services

Some men would prefer to go to a male-only clinic with male health providers, while others would prefer a clinic specific for MSM. Participants requested services that are friendly, have an increased emphasis on counselling, and are sensitive to people who have same-sex partners. Convenience, distance and cost were important considerations. Private clinics were preferred to hospitals because they were less crowded and offer more privacy.

Bisexual men also requested access to discrete and anonymous information and counselling through websites and telephone hotlines.

Recommendations

- Promote regular uptake of voluntary counselling & testing (VCT) for HIV and STIs by:

1) Revising health promotion content:
   - Promote and advertise existing sexual health services, including practical information on location, costs, confidentiality, and availability of MSM-friendly services;
   - Reduce the focus on symptoms in health promotion materials and promote regular testing for both HIV and STIs; and
   - Promote the benefits of early antiretroviral therapy for treatment and prevention.
2) Expanding the **delivery** of health promotion:
   - Develop online and telephone technologies to provide discrete, targeted and accessible information on HIV, STIs, sexual health and available health services; and
   - Build capacity of drug sellers (pharmacists) to provide more effective STI management, referrals and prevention counselling.
3) Implementing **structural** changes:
   - Integrate HIV and STI services;
   - Improve the capacity of services to provide periodic screening for STIs in key populations;
   - Develop the capacity of peer educators to discuss the benefits of early diagnosis of HIV and initiation of treatment;
   - Devise, implement and disseminate a clear referral system for sexual health services and testing which takes into account sexual & gender diversity;
   - Consider options to improve geographical access to targeted and appropriate care such as mobile VCT services; and
   - Provide training for health care workers in sexual and gender diversity to promote acceptance and appropriate care.

- Improve **surveillance** and routine monitoring to better understand the burden of HIV and STIs among behaviourally bisexual men and evaluate interventions.

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Appendix D: Questionnaire from sexual networking study

MALE AND KATHOEY QUESTIONNAIRE

SECTION 1: Screening questions and survey logistics and consent (field researcher to complete)

SCREENING QUESTIONS			
SCREENING SEED PARTICIPANTS	***CATEGORIES***	***CODE***	***SKIPS***
Have you completed this questionnaire before?	No Yes	0 1	→Continue →Go to Section 2: Repeat referrals
How old were you on your last birthday?	<18 years 18+	0 1	→End Interview →Continue
Are you a citizen of Laos?	No Yes	0 1	→End Interview →Continue
Have you lived in Vientiane for more than **12 months**?	No Yes	0 1	→End Interview →Continue
Have you had sex with a female partner at least once in the past **12 months**?	No Yes	0 1	→End Interview →Continue
Have you had sex with a male or kathoey partner at least once in the past **12 months**?	No Yes	0 1	→End Interview →Continue
SCREENING NODE PARTICIPANTS	***CATEGORIES***	***CODE***	***SKIPS***
Have you completed this questionnaire before?	No Yes	0 1	→End Interview →Go to repeat referral of nodes
How old were you on your last birthday?	<18 years 18+		→End Interview →Continue
Have you had oral, anal or vaginal sex at least once in the past **12 months**?	No Yes	0 1	→End Interview →Continue
LOGISTICS	***CATEGORIES***	***CODE***	***SKIPS***
ID number (recorded on coupon)	[___|___|___]	##/## / ##	No skip
ID number of person who referred participant (recorded on coupon)	[___|___|___]	##/## / ##	No skip
Interviewer code	Interviewer 1 Interviewer 2 Interviewer 3 Interviewer 4 Interviewer 5 Interviewer 6	1 2 3 4 5 6	No skip
Date of interview	Day [___]/Month[___]/2010	##/##/##	No skip
PARTICIPANT DESCRIPTION	***CATEGORIES***	***CODE***	***SKIPS***
Physical Build	Thin build Medium build Large build	1 2 3	No skip
Skin Tone	Pale skin Dark skin	1 2	No skip
Dress style	Man Woman	1 2	No skip
CONSENT	***CATEGORIES***	***CODE***	***SKIPS***
Consent verbally given by participant	No Yes	0 1	→ End interview → Continue

SECTION 2: Repeat referral of nodes

INFORMATION TO LINK NODES IN A NETWORK			
	CATEGORIES	***CODE***	***SKIPS***
What date were you interviewed? *(or if referred more than one time, What was the first date you were interviewed)*	Day [___]/Month[___]/2010	##/##	No skip
What was the name of the person who interviewed you?	Interviewer 1 Interviewer 2 Interviewer 3 Interviewer 4 Interviewer 5 Interviewer 6	1 2 3 4 5 6	No skip
What village do you currently live in?	Village _____		No skip
What is your birth month and year?	Month/year [__|__] Don't know No response	## 88 99	No skip
ID number of first node who referred participant (to be completed after interview by Research Officer)	[___|___|___]	##/## / ##	No skip
ID number of second node who referred participant (recorded on coupon)	[___|___|___]	##/## / ##	No skip

SECTION 3: Questionnaire

1. DEMOGRAPHICS				
NO	***QUESTION***	***ANSWER CATEGORIES***	***CODE***	***SKIPS***
1.1	What is your month and year of birth?	Month/year [__|__] Don't know No response	## 88 99	NO SKIP
1.2	What is your gender?	Female Male Kathoey	1 2 3	NO SKIP
1.3	What is the highest level of education you have completed?	Primary Lower secondary Upper secondary Higher	1 2 3 4	NO SKIP
1.4	Are you currently a student?	No Yes	0 1	→ Go to 1.6 → Go to 1.5
1.5	Where are you a student?	Secondary school Technical college University	1 2 3	NO SKIP
1.6	Do you currently work?	No Yes	0 1	→ go to 1.8 → Go to 1.7
1.7	How would you describe the main place that you work?	School/University Office Construction site Beauty Salon Massage Parlour/Sauna Brothel Shop Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Taxi/Driver Home	1 2 3 4 5 6 7 8 9 10 11 12 13 14	NO SKIP
1.8	What are your current living arrangements? *(That is, who do you live with?)*	Live with parents Live with a relative (brother, sister, aunt, etc)	1 2 3	NO SKIP

		Live alone Live with partner Share room/Dormitory Other	4 5 6 7	
1.9	What is your current marital status?	Single (never married) Married Separated or divorced Widowed	1 2 3 4	NO SKIP
1.10	Do you have children?	No Yes	0 1	NO SKIP
1.11	What village do you currently live in?	Village _____		NO SKIP
1.12	Are you originally from Vientiane Capital?	No Yes	0 1	→ Go to 1.13 → Go to 2.1
1.13	Which province are you originally from?	Attapeu Bokeo Bolikhamsai Champasak Houaphanh Khammouan Luang Namtha Luang prabang Oudomxay Phongsaly Saravan Savannakhet Sekong Vientiane Capital Vientiane Province Xiengkhoang Xaiyabouly province	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	NO SKIP
2.	**SEXUAL ORIENTATION AND BEHAVIOURS**			
	READ OUT*: We would now like to ask you several questions about your sexual experiences with females, males and kathoey.* *Please take your time to think about your answers so that we can get the most accurate information possible. Remember this information is strictly confidential.*			
2.1	How would you describe who you are sexually attracted to?	Exclusively heterosexual Predominantly heterosexual, only incidentally homosexual Predominantly heterosexual, but more than incidentally homosexual Equally heterosexual and homosexual; bisexual Predominantly homosexual, but more than incidentally heterosexual Predominantly homosexual, only incidentally heterosexual Exclusively homosexual	0 1 2 3 4 5 6	→ Go to 3.1 → Go to 2.2 → Go to 2.2 → Go to 2.2 → Go to 2.2 → Go to 2.2 → Go to 2.2
2.2	How would you describe the men you are predominantly attracted to?	Male (gay) Male (strait) Kathoey	2 3 4	NO SKIP
3.	**NUMBER OF PARTNERS**			
3.1	What is the total number of female partners that you have had anal or vaginal sex with in your lifetime?	0 1-5 6-20 21-50	1 2 3 4	NO SKIP

		51+ Don't know	5 6	
3.2	What is the total number of male partners that you have had anal sex with in your lifetime?	0 1-5 6-20 21-50 51+ Don't know	1 2 3 4 5 6	NO SKIP
3.3	What is the total number of kathoey partners that you have had anal sex with in your lifetime?	0 1-5 6-20 21-50 51+ Don't know	1 2 3 4 5 6	NO SKIP
4. FIRST SEXUAL EXPERIENCE				
4.1	How old were you the first time you had oral sex with anyone? *(This means that your partner put their mouth around your penis, or that you put your mouth around your partner's penis)*	Age [__|__] Never Don't know	## 1 2	NO SKIP
4.2	How would you describe the person you first had oral sex with?	Female Male Kathoey	1 2 3	NO SKIP
4.3	How old were you the first time that you had sexual intercourse with anyone? *(Sexual intercourse means that the penis entered the vagina or anus)*	Age [__|__] Never Don't know	## 1 2	NO SKIP
4.4	How would you describe the person you first had anal or vaginal sex with?	Female Male Kathoey	1 2 3	→ Go to 4.6 → Go to 4.5 → Go to 4.5
4.5	Were you the insertive or receptive partner the first time you had sex?	Insertive Receptive Both	1 2 3	NO SKIP
4.6	Was a condom used the first time you had anal or vaginal sex (from start to finish)?	No Yes	0 1	NO SKIP
5. REGULAR PARTNERS				
5.1	In the past **12 months**, have you had sexual contact with a regular partner? *(Sexual contact includes oral sex, vaginal sex or anal sex).* *(A regular partner is your girlfriend or boyfriend)*	No Yes	0 1	→ Go to 6.1 → Go to 5a.1
5a. Regular FEMALE partners				
5a.1	Have you received oral sex from a regular partner who was female in the past **12 months**? *(This means that your partner put her mouth around your penis)*	No Yes	0 1	NO SKIP
5a.2	Have you had anal or vaginal sex with a regular partner who was female in the past **12 months**?	No Yes	0 1	→ Go to 5b.1 → Go to 5a.3
5a.3	How many regular female partners have you had anal or vaginal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
5a.4	How many regular female partners have you had anal or vaginal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
5a.5	Where do you usually meet your regular female partner/s?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel	1 2 3 4 5 6 7 8 9	NO SKIP

		Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	10 11 12 13 14 15 16 17 18	
5a.6	What kind of sex did you usually have with your regular female partner/s in the past **12 months**?	Always vaginal sex Usually vaginal sex, sometimes anal sex Usually anal sex, sometimes vaginal sex Always anal sex	1 2 3 4	NO SKIP
5a.7	When you had vaginal sexual intercourse with your regular female partner/s in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have vaginal sex	1 2 3 4 5 6	→ Go to 5a.8 → Go to 5a.8 → Go to 5a.8 → Go to 5a.8 → Go to 5a.9 → Go to 5a.9
5a.8	When you used a condom during vaginal sex with your regular female partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
5a.9	When you had anal sexual intercourse with your regular female partner/s in the past **12 months** how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have anal sex	1 2 3 4 5 6	→ Go to 5a.10 → Go to 5a.10 → Go to 5a.10 → Go to 5a.10 → Go to 5b.1 → Go to 5b.1
5a.10	When you used a condom during anal sex with your regular female partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
5b. Regular MALE partners				
5b.1	Have you received oral sex from a regular partner who was male in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
5b.2	Have you given oral sex to a regular partner who was male in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
5b.3	Have you had anal sex with a regular partner who was male in the past **12 months**?	No Yes	0 1	→ Go to 5c.1 → Go to 5b.4
5b.4	How many regular male partners have you had anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
5b.5	How many regular male partners have you had anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
5b.6	Where do you usually meet your regular male partner/s?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel	1 2 3 4 5 6 7 8 9	NO SKIP

		Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	10 11 12 13 14 15 16 17 18	
5b.7	How would you describe your regular male partner/s?	Male (gay) Male (strait) Both	1 2 3	NO SKIP
5b.8	Are you usually the insertive or receptive partner in anal sex with your regular male partners?	Insertive Receptive Both	1 2 3	NO SKIP
5b.9	When you had insertive anal sex with your regular male partner/s in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 5b.10 → Go to 5b.10 → Go to 5b.10 → Go to 5b.10 → Go to 5b.11 → Go to 5b.11
5b.10	When you used a condom during anal insertive anal sex with your regular male partner/s, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
5b.11	When you had receptive anal sex with your regular male partner in the past **12 months**, how often did you use condoms from start to finish? *(That is, your partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 5b.12 → Go to 5b.12 → Go to 5b.12 → Go to 5b.12 → Go to 5c.1 → Go to 5c.1
5b.12	When you used a condom during receptive anal sex with your regular male partner/s, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
5c. Regular KATHOEY partners				
5c. 1	Have you received oral sex from a regular partner who was kathoey in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
5c.2	Have you given oral sex to a regular partner who was kathoey in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
5c.3	Have you had anal sex with a regular partner who was kathoey in the past **12 months**?	No Yes	0 1	→ Go to 6.1 → Go to 5c.4
5c.4	How many regular kathoey partners have you had anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
5c.5	How many regular kathoey partners have you had anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
5c.6	Where do you usually meet your regular kathoey partner/s?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub	1 2 3 4 5 6 7	NO SKIP

		Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	8 9 10 11 12 13 14 15 16 17 18	
5c.7	How would you describe your regular kathoey partner/s?	Kathoey (effeminate) Kathoey (masculine) Both	1 2 3	NO SKIP
5c.8	Are you usually the insertive or receptive partner in anal sex with your regular kathoey partners?	Insertive Receptive Both	1 2 3	NO SKIP
5c.9	When you had insertive anal sex with your regular kathoey partner/s in the past **12 months**, how often did you use condoms from start to finish? (*That is, you wore the condom*)	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 5c.10 → Go to 5c.10 → Go to 5c.10 → Go to 5c.10 → Go to 5c.11 → Go to 5c.11
5c.10	When you used a condom during insertive anal sex with your regular kathoey partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
5c.11	When you had receptive anal sex with your regular kathoey partner in the past **12 months**, how often did you use condoms from start to finish? *(That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 5c.12 → Go to 5c.12 → Go to 5c.12 → Go to 5c.12 → Go to 6.1 → Go to 6.1
5c.12	When you used a condom during receptive anal sex with your regular kathoey partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
6. CASUAL PARTNERS				
6.1	In the past **12 months**, have you had sexual contact with a casual partner? *(Sexual contact includes oral sex, vaginal sex or anal sex).* *(A casual partner is somebody you have sex with only, and without paying or receiving money, gifts or favours)*	No Yes	0 1	→ Go to 7.1 → Go to 6a.1
6a. Casual FEMALE partners				
6a.1	Have you received oral sex from a casual partner who was female in the past **12 months**? *(This means that your partner put her mouth around your penis)*	No Yes	0 1	NO SKIP
6a.2	Have you had anal or vaginal sex with a casual partner who was female in the past **12 months**?	No Yes	0 1	→ Go to 6b.1 → Go to 6a.3
6a.3	How many casual female partners have you had anal or vaginal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
6a.4	How many casual female partners have you had anal or vaginal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
6a.5	Where do you usually meet your casual female	Friends house	1	NO SKIP

	partner/s?	Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	
6a.6	What kind of sex did you usually have with your casual female partner/s in the past **12 months**?	Always vaginal sex Usually vaginal sex, sometimes anal sex Usually anal sex, sometimes vaginal sex Always anal sex	1 2 3 4	NO SKIP
6a.7	When you had vaginal sexual intercourse with your casual female partner/s in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have vaginal sex	1 2 3 4 5 6	→ Go to 6a.8 → Go to 6a.8 → Go to 6a.8 → Go to 6a.8 → Go to 6a.9 → Go to 6a.9
6a.8	When you used a condom during vaginal sex with your casual female partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	No skip
6a.9	When you had anal sexual intercourse with your casual female partner in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have anal sex	1 2 3 4 5 6	→ Go to 6a.10 → Go to 6a.10 → Go to 6a.10 → Go to 6a.10 → Go to 6b.1 → Go to 6b.1
6a.10	When you used a condom during anal sex with your casual female partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
6b. Casual MALE partners				
6b.1	Have you received oral sex from a casual partner who was male in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
6b.2	Have you given oral sex to a casual partner who was male in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
6b.3	Have you had anal sex with a casual partner who was male in the past **12 months**?	No Yes	0 1	→ Go to 6c.1 → Go to 6b.4
6b.4	How many casual male partners have you had anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
6b.5	How many casual male partners have you had anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
6b.6	Where do you usually meet your casual male	Friends house	1	NO SKIP

	partners/s?	Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	
6b.7	How would you describe your casual male partner/s?	Male (gay) Male (strait) Both	1 2 3	NO SKIP
6b.8	Are you usually the insertive or receptive partner in anal sex with your casual male partners/s?	Insertive Receptive Both	1 2 3	NO SKIP
6b.9	When you had insertive anal sex with your casual male partner/s in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 6b.10 → Go to 6b.10 → Go to 6b.10 → Go to 6b.10 → Go to 6b.11 → Go to 6b.11
6b.10	When you used a condom during insertive anal sex with your casual male partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	NO SKIP
6b.11	When you had receptive anal sex with your casual male partner in the past **12 months**, how often did you use condoms from start to finish? (*That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 6b.12 → Go to 6b.12 → Go to 6b.12 → Go to 6b.12 → Go to 6c.1 → Go to 6c.1
6b.12	When you used a condom during receptive anal sex with your casual male partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
6c. Casual KATHOEY partners				
6c.1	Have you received oral sex from a casual partner who was kathoey in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
6c.2	Have you given oral sex to a casual partner who was kathoey in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
6c.3	Have you had anal sex with a casual partner who was kathoey in the past **12 months**?	No Yes	0 1	→ Go to 7.1 → Go to 6c.4
6c.4	How many casual kathoey partners have you had anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP

6c.5	How many casual kathoey partners have you had anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
6c.6	Where do you usually meet your casual kathoey partner/s?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
6c.7	How would you describe your casual kathoey partner/s?	Kathoey (effeminate) Kathoey (masculine) Both	1 2 3	NO SKIP
6c.8	Are you usually the insertive or receptive partner in anal sex with your casual kathoey partners?	Insertive Receptive Both	1 2 3	NO SKIP
6c.9	When you had insertive anal sex with your casual kathoey partner in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 6c.10 → Go to 6c.10 → Go to 6c.10 → Go to 6c.10 → Go to 6c.11 → Go to 6c.11
6c.10	When you used a condom during insertive anal sex with your casual kathoey partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	
6c.11	When you had receptive anal sex with your casual kathoey partner in the past **12 months**, how often did you use condoms from start to finish? *(That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 6c.12 → Go to 6c.12 → Go to 6c.12 → Go to 6c.12 → Go to 7.1 → Go to 7.1
6c.12	When you used a condom during receptive anal sex with your casual kathoey partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
7. TRANSACTIONAL SEX (BEING PAID FOR SEX)				
7.1	In the past **12 months**, have you been paid with money gifts or favours in exchange for sexual contact? *(that is, they gave you money, gifts, or favours)* *(Sexual contact includes oral sex, vaginal sex or anal sex).*	No Yes	0 1	→ Go to 8.1 → Go to 7a.1
7a. Paying FEMALE partners				
7a.1	Have you been paid to receive oral sex from a female partner in the past **12 months**? *(This means that your partner put her mouth*	No Yes	0 1	NO SKIP

	around your penis)			
7a.2	Have you been paid to have vaginal or anal sex by a partner who was female in the past **12 months**?	No Yes	0 1	→ Go to 7b.1 → Go to 7a.3
7a.3	How many female partners have paid you for vaginal or anal sex in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
7a.4	How many female partners have paid you for vaginal or anal sex in the past **12 months**	Number [__|__] Don't know No response	## 88 99	NO SKIP
7a.5	Where do you usually meet your female partner/s that paid you for sex?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
7a.6	What kind of sex did you usually have with your female partner/s that paid you for sex in the past **12 months**?	Always vaginal sex Usually vaginal sex, sometimes anal sex Usually anal sex, sometimes vaginal sex Always anal sex	1 2 3 4	NO SKIP
7a.7	When you had vaginal sexual intercourse with your female partners that paid you for sex in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have vaginal sex	1 2 3 4 5 6	→ Go to 7a.8 → Go to 7a.8 → Go to 7a.8 → Go to 7a.8 → Go to 7a.9 → Go to 7a.9
7a.8	When you used a condom during vaginal sex with your female partner/s that paid you for sex in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
7a.9	When you had anal sexual intercourse with your female partners that paid you for sex in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have anal sex	1 2 3 4 5 6	→ Go to 7a.10 → Go to 7a.10 → Go to 7a.10 → Go to 7a.10 → Go to 7b.1 → Go to 7b.1
7a.10	When you used a condom during anal sex with your female partner/s that paid you for sex in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
7b. Paying MALE partners				
7b.1	Have you been paid to receive oral sex from a partner who was male in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
7b.2	Have you been paid to give oral sex to a partner who was male in the past **12 months**?	No Yes	0 1	NO SKIP

	(This means that you put your mouth around your partner's penis)			
7b.3	Have you been paid to have anal sex by a partner who was male in the past **12 months**?	No Yes	0 1	→ Go to 7c.1 → Go to 7b.4
7b.4	How many male partners have paid you for anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
7b.5	How many male partners have paid you for anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
7b.6	Where do you usually meet your male partner/s that paid you to have anal sex?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
7b.7	How would you describe the male partner/s that paid you to have anal sex?	Male (gay) Male (strait) Both	1 2 3	NO SKIP
7b.8	Are you usually the insertive or receptive partner in anal sex with your male partner/s that paid you for sex?	Insertive Receptive Both	1 2 3	NO SKIP
7b.9	When you had insertive anal sex with your male partner/s that paid you for sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 7b.10 → Go to 7b.10 → Go to 7b.10 → Go to 7b.10 → Go to 7b.11 → Go to 7b.11
7b.10	When you used a condom during insertive anal sex with your male partner/s that paid you for sex in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
7b.11	When you had receptive anal sex with your male partner/s that paid you for sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 7b.12 → Go to 7b.12 → Go to 7b.12 → Go to 7b.12 → Go to 7c.1 → Go to 7c.1
7b.12	When you used a condom during receptive anal sex with your male partner/s that paid you for sex in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
7c. Paying KATHOEY partners				
7c.1	Have you been paid to receive oral sex by a partner who was kathoey in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
7c.2	Have you been paid to give oral sex to a partner	No	0	NO SKIP

	who was kathoey in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	Yes	1	
7c.3	Have you been paid to have anal sex with a partner who was kathoey in the past **12 months**?	No Yes	0 1	→ Go to 8.1 → Go to 7c.4
7c.4	How many kathoey partners have paid you for anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
7c.5	How many kathoey partners have paid you for anal sex in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
7c.6	Where do you usually meet your kathoey partner/s that paid you for sex?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
7c.7	How would you describe your kathoey partner/s that paid you for anal sex?	Kathoey (effeminate) Kathoey (masculine) Both	1 2 3	NO SKIP
7c.8	Are you usually the insertive or receptive partner in anal sex with your kathoey partner/s that paid you for sex?	Insertive Receptive Both	1 2 3	NO SKIP
7c.9	When you had insertive anal sex with your kathoey partner/s that paid you for sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 7c.10 → Go to 7c.10 → Go to 7c.10 → Go to 7c.10 → Go to 7c.11 → Go to 7c.11
7c.10	When you used a condom during insertive anal sex with your kathoey partner/s that paid you for sex in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
7c.11	When you had receptive anal sex with your kathoey partner/s that paid you to have sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 7c.12 → Go to 7c.12 → Go to 7c.12 → Go to 7c.12 → Go to 8.1 → Go to 8.1
7c.12	When you used a condom during receptive anal sex with your kathoey partner/s that paid you for sex in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
8. TRANSACTIONAL SEX (PAYING FOR SEX)				
8.1	In the past **12 months**, have you paid money, gifts or favours in exchange for sexual contact? *(That is, you gave them money, gifts, or favours)* *(Sexual contact includes oral sex, vaginal sex or*	No Yes	0 1	→ Go to 9.1 → Go to 8a.1

	anal sex).			
8a. Paid FEMALE partners				
8a.1	Have you paid to receive oral sex from a female partner in the past **12 months**? *(This means that your partner put her mouth around your penis)*	No Yes	0 1	NO SKIP
8a.2	Have you paid for vaginal or anal sex with a female partner in the past **12 months**?	No Yes	0 1	→ Go to 8b.1 → Go to 8a.3
8a.3	How many female partners have you paid for vaginal or anal with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
8a.4	How many female partners have you paid for vaginal or anal with in the past **12 months**	Number [__|__] Don't know No response	## 88 99	NO SKIP
8a.5	Where do you usually meet your female partner/s that you paid for sex?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
8a.6	What kind of sex do you usually have with your female partner/s that you paid for sex with in the past **12 months**?	Always vaginal sex Usually vaginal sex, sometimes anal sex Usually anal sex, sometimes vaginal sex Always anal sex	1 2 3 4	NO SKIP
8a.7	When you had vaginal sexual intercourse with your female partner/s that you paid for sex with in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have vaginal sex	1 2 3 4 5 6	→ Go to 8a.8 → Go to 8a.8 → Go to 8a.8 → Go to 8a.8 → Go to 8a.9 → Go to 8a.9
8a.8	When you used a condom during vaginal sex with your female partner/s that you paid for sex with in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
8a.9	When you had anal sexual intercourse with your female partner/s that you paid for sex with in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have anal sex	1 2 3 4 5 6	→ Go to 8a.9 → Go to 8a.9 → Go to 8a.9 → Go to 8a.9 → Go to 8b.1 → Go to 8b.1
8a.10	When you used a condom during anal sex with your female partner/s that you paid for sex with in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
8b. Paid MALE partners				
8b.1	Have you paid to receive oral sex from a partner who was male in the past **12 months**?	No Yes	0 1	NO SKIP

	(This means that your partner put his mouth around your penis)			
8b.2	Have you paid to give oral sex to a partner who was male in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
8b.3	Have you paid a partner who was male for anal sex in the past **12 months**?	No Yes	0 1	→ Go to 8c.1 → Go to 8b.4
8b.4	How many male partners have you paid for anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
8b.5	How many male partners have you paid for anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
8b.6	Where do you usually meet your male partner/s that you paid you for anal sex?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
8b.7	How would you describe your male partner/s that you paid you for anal sex?	Male (gay) Male (strait) Both	1 2 3	NO SKIP
8b.8	Are you usually the insertive or receptive partner in anal sex with your male partner/s that you paid for sex?	Insertive Receptive Both	1 2 3	NO SKIP
8b.9	When you had insertive anal sex with your male partner/s that you paid for sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 8b.10 → Go to 8b.10 → Go to 8b.10 → Go to 8b.10 → Go to 8b.11 → Go to 8b.11
8b.10	When you used a condom during insertive anal sex with your male partner/s that you paid you for sex with in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
8b.11	When you had receptive anal sex with your male partner/s that you paid for sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 8b.12 → Go to 8b.12 → Go to 8b.12 → Go to 8b.12 → Go to 8c.1 → Go to 8c.1
8b.12	When you used a condom during receptive anal sex with your male partner/s that you paid you for sex with in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
8c. Paid KATOEY partners				
8c.1	Have you paid to receive oral sex from a partner	No	0	NO SKIP

	who was kathoey in the past **12 months**? *(This means that your partner put his mouth around your penis)*	Yes	1	
8c.2	Have you paid to give oral sex from a partner who was kathoey in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
8c.3	Have you paid a partner who was kathoey for anal sex in the past **12 months**?	No Yes	0 1	→ Go to 9.1 → Go to 8c.4
8c.4	How many kathoey partners have you paid for anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
8c.5	How many kathoey partners have you paid for anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
8c.6	Where do you usually meet your kathoey partner/s that you paid for anal sex?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
8c.7	How would you describe your kathoey partner/s that you paid for anal sex?	Kathoey (effeminate) Kathoey (masculine) Both	1 2 3	NO SKIP
8c.8	Are you usually the insertive or receptive partner in anal sex with your kathoey partner/s that you pay for sex?	Insertive Receptive Both	1 2 3	NO SKIP
8c.9	When you had insertive anal sex with your kathoey partner/s that you paid for sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 8c.10 → Go to 8c.10 → Go to 8c.10 → Go to 8c.10 → Go to 8c.11 → Go to 8c.11
8c.10	When you used a condom during insertive anal sex with your kathoey partner/s that you paid you for sex with in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
8c.11	When you had receptive anal sex with your kathoey partner/s that you paid for sex in the past **12 months**, how often did you use condoms from start to finish? *(That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 8c.12 → Go to 8c.12 → Go to 8c.12 → Go to 8c.12 → Go to 9.1 → Go to 9.1
8c.12	When you used a condom during receptive anal sex with your male partner/s that you paid you for sex with in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
9. FOREIGN PARTNERS				

9.1	In the past **12 months**, have you had sexual contact with a foreign partner? *(A foreigner is someone who does not have Lao nationality)* *(Sexual contact includes oral sex, vaginal sex or anal sex).*	No Yes	0 1	→ Go to 10.1 → Go to 9a.1
9a. Foreign FEMALE partners				
9a.1	Have you received oral sex from a foreign female partner in the past **12 months**? *(This means that your partner put her mouth around your penis)*	No Yes	0 1	NO SKIP
9a.2	Have you had vaginal or anal sex with a foreign partner who was female in the past **12 months**?	No Yes	0 1	→ Go to 9b.1 → Go to 9a.3
9a.3	How many foreign female partners have you had vaginal or anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
9a.4	How many foreign female partners have you had vaginal or anal sex with in the past **12 months**	Number [__|__] Don't know No response	## 88 99	NO SKIP
9a.5	Where do you usually meet your foreign female partner/s?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
9a.6	What was the nationally of your most recent foreign female partner?	Thai Vietnamese Chinese Cambodian Japanese Korean Westerner of Lao descent Westerner (e.g. European, American, Australian) Other	1 2 3 4 5 6 7 8 9	NO SKIP
9a.7	What kind of sex did you usually have with your foreign female partner/s in the past **12 months**?	Always vaginal sex Usually vaginal sex, sometimes anal sex Usually anal sex, sometimes vaginal sex Always anal sex	1 2 3 4	NO SKIP
9a.8	When you had vaginal sexual intercourse with your foreign female partner/s in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have vaginal sex	1 2 3 4 5 6	→ Go to 9a.9 → Go to 9a.9 → Go to 9a.9 → Go to 9a.9 → Go to 9a.10 → Go to 9a.10
9a.9	When you used a condom during vaginal sex with foreign female partner/s in the past **12 months**, how often did you also use a water-	Always Almost always Half of the time	1 2 3	NO SKIP

	based lubricant?	Some of the time Never	4 5	
9a.10	When you had anal sexual intercourse with your foreign female partner/s in the past **12 months**, how often did you use condoms from start to finish?	Always Almost always Half of the time Some of the time Never Did not have anal sex	1 2 3 4 5 6	→ Go to 9a.11 → Go to 9a.11 → Go to 9a.11 → Go to 9a.11 → Go to 9b.1 → Go to 9b.1
9a.11	When you used a condom during anal sex with foreign female partner/s in the past **12 months**, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
9b. Foreign MALE partners				
9b.1	Have you received oral sex from a foreign partner who was male in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
9b.2	Have you given oral sex to a foreign partner who was male in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
9b.3	Have you had anal sex with a foreign partner who was male in the past **12 months**?	No Yes	0 1	→ Go to 9c.1 → Go to 9b.4
9b.4	How many foreign male partners have you had anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
9b.5	How many foreign male partners have you had anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
9b.6	Where do you usually meet your foreign male partner/s?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
9b.7	How would you describe your foreign male partner/s?	Male (gay) Male (strait) Both	1 2 3	NO SKIP
9b.8	What was the nationally of your most recent foreign male partner?	Thai Vietnamese Chinese Cambodian Japanese Korean Westerner of Lao descent Westerner (e.g. European, American, Australian) Other	1 2 3 4 5 6 7 8 9	NO SKIP
9b.9	Are you usually the insertive or receptive partner in anal sex with your foreign male partner/s?	Insertive Receptive	1 2	NO SKIP

		Both	3	
9b.10	When you had insertive anal sex with your foreign male partner/s in the past **12 months**, how often did you use condoms from start to finish? (*That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 9b.11 → Go to 9b.11 → Go to 9b.11 → Go to 9b.11 → Go to 9b.12 → Go to 9b.12
9b.11	When you used a condom during anal insertive anal sex with your foreign male partner/s, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
9b.12	When you had receptive anal sex with your foreign male partner/s in the past **12 months**, how often did you use condoms from start to finish? (*That is, you're partner wore the condom*)	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 9b.13 → Go to 9b.13 → Go to 9b.13 → Go to 9b.13 → Go to 9c.1 → Go to 9c.1
9b.13	When you used a condom during anal receptive anal sex with your foreign male partner/s, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
9c. Foreign KATHOEY partners				
9c.1	Have you received oral sex from a foreign partner who was kathoey in the past **12 months**? *(This means that your partner put his mouth around your penis)*	No Yes	0 1	NO SKIP
9c.2	Have you given oral sex to a foreign partner who was kathoey in the past **12 months**? *(This means that you put your mouth around your partner's penis)*	No Yes	0 1	NO SKIP
9c.3	Have you had anal sex with a foreign partner who was kathoey in the past **12 months**?	No Yes	0 1	→ Go to 10.1 → Go to 9c.4
9c.4	How many foreign kathoey partners have you had anal sex with in your lifetime?	Number [__|__] Don't know No response	## 88 99	NO SKIP
9c.5	How many foreign kathoey partners have you had anal sex with in the past **12 months**?	Number [__|__] Don't know No response	## 88 99	NO SKIP
9c.6	Where do you usually meet your foreign kathoey partner/s?	Friends house Unit rental Dormitory School/university Restaurant Café Bar/Nightclub/Pub Beershop/beer hall Hotel Movie theatre Football ground Massage parlour/Sauna Brothel Internet On the telephone Park Shops near factory Other	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO SKIP
9c.7	How would you describe your foreign kathoey partner/s ?	Kathoey (effeminate) Kathoey (masculine)	1 2	NO SKIP

		Both	3	
9c.8	What was the nationally of your most recent foreign kathoey partner?	Thai Vietnamese Chinese Cambodian Japanese Korean Westerner of Lao descent Westerner (e.g. European, American, Australian) Other	1 2 3 4 5 6 7 8 9	NO SKIP
9c.9	Are you usually the insertive or receptive partner in anal sex with your foreign kathoey partner/s?	Insertive Receptive Both	1 2 3	NO SKIP
9c.10	When you had insertive anal sex with your foreign kathoey partner/s in the past **12 months**, how often did you use condoms from start to finish? *(That is, you wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have insertive anal sex	1 2 3 4 5 6	→ Go to 9c.11 → Go to 9c.11 → Go to 9c.11 → Go to 9c.11 → Go to 9c.12 → Go to 9c.12
9c.11	When you used a condom during insertive anal sex with your foreign kathoey partner/s, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
9c.12	When you had receptive anal sex with your foreign kathoey partner/s in the past **12 months**, how often did you use condoms from start to finish? *(That is, you're partner wore the condom)*	Always Almost always Half of the time Some of the time Never Did not have receptive anal sex	1 2 3 4 5 6	→ Go to 9c.13 → Go to 9c.13 → Go to 9c.13 → Go to 9c.13 → Go to 10.1 → Go to 10.1
9c.13	When you used a condom during receptive anal sex with your foreign kathoey partner/s, how often did you also use a water-based lubricant?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
10.	**DRUG AND ALCOHOL USE**			
10.1	In the past **12 months**, how often did you have a drink containing alcohol?	Never Monthly or less 2-4 times per month 2-3 times per week Four or more times per week	0 1 2 3 4	→ Go to 10.5 → Go to 10.2 → Go to 10.2 → Go to 10.2 → Go to 10.2
10.2	In the past **12 months**, how often did you drink alcohol before having sex with a female partner?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
10.3	In the past **12 months**, how often did you drink alcohol before having sex with a male partner?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
10.4	In the past **12 months**, how often did you drink alcohol before having sex with a kathoey partner?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
10.5	In the past **12 months**, have you used any illegal or illicit drugs? (*Including legal drugs that have not been prescribed by a doctor)*	No Yes	0 1	→ Go to 11.1 → Go to 10.6

10.6	What illegal/illicit drugs have you used in the past **12 months**? *(Tick all that apply)* *(Including legal drugs that have not been prescribed by a doctor)*	Acid/LSD/mushrooms (1) Ecstasy/MDMA (2) Inhalants/chroming/glue (3) Speed/ice/crystal meth (4) Cocaine (5) Heroin (6) Marijuana (7) Sexual stimulants (eg. Viagra) (8) Sedatives (eg. Valium) (9) Other (10)	0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1	NO SKIP
10.7	In the past **12 months**, how often did you use illegal/illicit drugs before having sex with a female partner?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
10.8	In the past **12 months**, how often did you use illegal/illicit drugs before having sex with a male partner?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
10.9	In the past **12 months**, how often did you use illegal/illicit drugs before having sex with a kathoey partner?	Always Almost always Half of the time Some of the time Never	1 2 3 4 5	NO SKIP
10.10	Have you injected drugs at any time in the last month?	No Yes	0 1	→ Go to 10.14 → Go to 10.11
10.11	The last time you injected drugs, did you use a strile needle and syringe?	No Yes Don't know	0 1 2	NO SKIP
10.12	Have you had sexual intercourse in the last month?	No Yes	0 1	NO SKIP
10.13	Did you use a condom the last time you had sexual intercourse?	No Yes	0 1	NO SKIP
10.14	In the last twelve months, have you been given sterile needles ans syringes (e.g. by an outreach workers, a peer educator or from a needle exchange programme?	No Yes	0 1	NO SKIP
11.	**KNOWLEDGE ABOUT HIV/AIDS**			
	READ OUT: *Please give your opinion on the following statements:*			
11.1	Can having sex with only one faithful, uninfected partner reduce the risk of HIV transmission?	No Yes Don't know	0 1 2	NO SKIP
11.2	Can using condoms during vaginal sex reduce the risk of HIV transmission?	No Yes Don't know	0 1 2	NO SKIP
11.3	Can using condoms during anal sex reduce the risk of HIV transmission?	No Yes Don't know	0 1 2	NO SKIP
11.4	A person can get HIV by getting injections with a needle that was already used by someone else?	No Yes Don't know	0 1 2	NO SKIP
11.5	Can a person get HIV from mosquito bites?	No Yes Don't know	0 1 2	NO SKIP
11.6	Can a person get HIV by sharing a meal with	No	0	NO SKIP

	someone who is infected?	Yes Don't know	1 2	
11.7	Can a healthy-looking person have HIV?	No Yes Don't know	0 1 2	NO SKIP
11.8	Can HIV can be transmitted from a pregnant mother to her child?	No Yes Don't know	0 1 2	NO SKIP

SECTION 4: Network Referrals

Network Member 1-5				
11.1	Gender	Female Male Kathoey	1 2 3	NO SKIP
11.2	Age	18-25 years old 25-35 years old 35-45 years old 45+ years old	1 2 3 4	NO SKIP
11.3	Village	Village name	Add in village names	NO SKIP
11.4	Physical Build	Thin build Medium build Large build	1 2 3	NO SKIP
11.5	Skin tone	Pale skin Dark skin	1 2	NO SKIP
11.6	Dress style	Male Female	1 2	NO SKIP
11.7	Relationship to you?	Regular sexual partner Casual sexual partner I bought sex from them They paid me for sex Foreign partner	1 2 3 4 5	NO SKIP
11.8	Please indicate what types of sex you have had with this person?	Vaginal sex Anal sex Both vaginal and anal sex		NO SKIP
11.9	On the last occasion when you had vaginal sex with this person, did you use a condom from start to finish?	No Yes	0 1	NO SKIP
11.10	On the last occasion when you had anal sex with this person, did you use a condom from start to finish?	No Yes	0 1	NO SKIP
11.11	If you used a condom, did you also use a water-based lubricant?	No Yes	0 1	NO SKIP
11.12	Have you ever had sex without a condom with this person?	No Yes	0 1	NO SKIP
11.13	Please indicate the months during the last **12 months** that you had sex with this person.	April 2009 May 2009 June 2009 July 2009 August 2009 September 2009 October 2009 November 2009 December 2009 January 2010 February 2010 March 2010	0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1 0/1	NO SKIP

Appendix E: Key documents from qualitative study primary data collection

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Appendix E-1: Discussion guide, focus groups with bisexual men

Relationships

1. How do men feel about men having more than one relationship going on at once?
    a) How common is this among men like yourselves?
    b) Can you describe what kind of partners men might have at the same time?
    c) Women and men/kathoey, or just one gender?
    d) How many partners are men seeing at the same time?
    e) If not common, how long do men typically have in-between relationships?
2. How long do relationships typically last? Consider different types of relationships.
    a) Which partners do men typically form emotional attachment with?
    b) Think about gender , as well as partner type (regular, casual)
3. When buying or being paid for sex (with gifts or money), how and where is sex negotiated?
    a) How is the amount decided on?
    b) Paid in gifts or money?
    c) Is the type of sex discussed?
    d) Are condoms part of the negotiations?
    e) Is anyone else involved in the arrangement?
    f) Where does the sex happen?
    g) How do partners that you pay for sex differ from partners that pay you for sex?
    h) Are these one-off encounters, or is it ever a regular or repeated arrangement?
4. We've previously heard that common places for meeting sex partners are bars and restaurants, friends' houses, dormitories, and massage.
   Can you describe places that men go to if they are specifically looking to meet someone to have sex with?
    a) What kind of person would they usually plan to have sex with? (male, female, kathoey, sex worker?)
    b) If planning to have sex that night, how likely are men to carry condoms with them?
5. Where do you meet sex partners when you were not planning to have sex?
6. How have phone apps and the internet changed the way men meet sex partners?
    a) How commonly are they used?
    b) What are names of specific sites and apps?
    c) What sort of partners would one meet using them?
7. What kind of people do guys like yourselves spend time with socially; how would you describe your friends? *(i.e. gender, sexuality)*

Moderators of condom use

8. From what we've heard before, sometimes men use condoms and sometimes they don't. How do you decide whether or not to use a condom?
    a) What are common reasons for not using a condom?
    b) What are common reasons for using a condom?
    c) Who usually initiates condom use?
    d) How do you discuss condom use with your partners?
       If don't use condoms at all, record this.
9. How do men feel about carrying condoms?
    a) How common is it for men to carry condoms?
    b) What happens if you're not carrying condoms and you meet someone you want to have sex with?
    c) Where can you get condoms from? What about lubricant?
    d) What places would you prefer to get condoms from?
       Think about either current places, or places you would like to be able to get them in the future

Access to information and services

10. Where do you or other bisexual men you know go for the following services, information, and advice?
    This may be a place (e.g. clinic, hospital, pharmacy) or a person (friends, family, teacher). If clinic/hospital, get specific name. If they don't access these services/seek advice, then note this, and ask WHY.
    a) STI tests or treatment
    b) HIV tests
    c) Information about HIV
    d) Information about STIs/sexual health
    e) General health (if feeling sick etc.)
    f) Advice/information about sex or relationships
    g) Advice about sexuality
11. Are there any other places that you know of where you can get these services/information (even if you don't use them yourself)
12. Why do you choose these places over other options?
    If have given a name of clinic(s), asks why choose this clinic over other clinics
    If get all advice from friends/family, ask why don't see a health professional/go to clinic. What don't they like about these places?
13. What other services, or improvements on current services, do you think bisexual men would like to have?
14. How should these services look and feel?
    a) Who should be accessing these services? i.e. should they be targeted to a particular group of people, or be generic
    b) What sort of location would you prefer?
       Consider privacy, discreteness, location, ease of access

Social norms and health beliefs

15. What social expectations are there on relationships and marriage in Laos?
    a) Are there social, community or family pressures to marry?
    b) Is it expected that women and men go out together?
    c) How acceptable is sex before marriage?
    d) What happens when you stray from these norms?
    e) How are the expectations and what is acceptable different between young and older people?
    f) How socially acceptable are different types of sex in Laos?
       Think about oral, anal etc., and with female versus male partners
16. How is sexuality discussed in Laos?
    a) Are gender and sexuality talked about among your peers? Family? Broader community?
    b) Do people talk openly about their <u>own</u> sexuality?
17. What do people in your community say about HIV?
    a) Can you explain any local beliefs about where it is from, how you get it, and how you can treat it?
    b) Do men ever discuss it?

Appendix E-2: Discussion guide, interviews with bisexual men

1. Are you currently in a relationship? Can you describe the nature of your relationship/s?
2. Describe who else you have been involved with in the past few months?
3. What sort of people are you attracted to romantically?
4. How would you describe your sexuality?
    - First, let them answer naturally
    - Second, prompt them showing the Kinsey scale
5. How do you personally feel about using condoms?
    a) How often do you use condoms with your various partner/s?
    b) How do you decide whether or not to use a condom?
6. When and how do you use lubricant during sex?
    a) If don't use lube, try to understand why
7. Can you describe the first time you had oral or anal sex with a man or kathoey, and how it came about?
8. Can you describe the <u>last</u> time you had sex with a man or a short-haired kathoey, and how it came about?
    a) Was this the first time you had sex with him? If not, how long have you been having sex with him? How frequently?
    b) How did you meet him?
        - Where?
        - Did you go out with any intention to meet someone to have sex with?
        - Did you first approach him, or did he approach you?
    c) Where you drinking at the time? (if so, how much)
    d) Did you have sex where you met? Somewhere else? At another time?
    e) Did you have oral sex? Anal sex? Position(s) (top/bottom)?
    f) Did you use a condom? Lubricant? Where you carrying any of these at the time?
    g) Do you think you will you have sex with this person again?
    h) How would you describe the person you had sex with?
    i) How would you describe your relationship? (e.g. Boyfriend? Casual? One-night stand?)
    j) Was there any money or other goods exchanged? *explain*
9. Can you describe the last time you had sex with a woman?
    a) Was this the first time you had sex with her? If not, how long have you been having sex with her? How frequently?
    b) How did you meet her?
        - Where?
        - Did you go out with any intention to meet someone to have sex with?
    c) Where you drinking at the time? (if so, how much)
    d) Did you have sex where you met? Somewhere else? At another time?
    e) Did you have oral sex? Vaginal sex? Anal sex?
    f) Did you use a condom? Where you carrying any of these at the time?
    g) Do you think you will you have sex with this person again?
    h) How would you describe your relationship? (e.g. *Girlfriend? Casual? One-night stand?*)
    i) Was there any money or other goods exchanged?
10. Have you ever had sex with a long-hair kathoey?
    a) If yes, can you describe the last time you had sex with a long-hair kathoey?
    b) Was this the first time you had sex with her? If not, how long have you been having sex with her? How frequently?
    c) How did you meet her?
        - Where?
        - Did you first approach her, or did she approach you?
    d) Did you go out with any intention to meet someone to have sex with?
    e) Where you drinking at the time? (if so, how much)
    f) Did you have sex where you met? Somewhere else? At another time?

   g) Did you have oral sex? Anal sex? Position(s) (top/bottom)?
   h) Did you discuss using a condom? Did you use a condom? Lubricant? Where you carrying any of these at the time?
   i) Do you think you will you have sex with this person again?
   j) How is sex with kathoey similar or different to having sex with a women or man?
11. Think about the last time you didn't use a condom during sex with a man or kathoey. Can you please explain why you didn't use a condom in this instance?
   a) Why didn't you use a condom?
   b) Were either of you carrying a condom at the time?
   c) Did you discuss whether or not to use a condom?
   d) Were you the top or bottom?
   e) Had you had sex with this person before? Did you have sex with them again afterwards? Did you use a condom any of these times?
   f) How would you describe your level of emotional attachment with this person, and the nature of your relationship?
12. Think about the last time you didn't use a condom during sex with a woman. Can you please explain why you didn't use a condom with this women?
   a) Why didn't you use a condom?
   b) Were either of you carrying a condom at the time?
   c) Did you discuss whether or not to use a condom?
   d) Had you had sex with this woman before? Did you have sex with them again afterwards? Did you use a condom any of these times?
   e) How would you describe your level of emotional attachment with this person, and the nature of your relationship?
13. What is your preference for being the top or the bottom during anal sex, if any?
   a) How does this differ for your different partners? Men vs kathoey, regular vs casual, etc.
   b) If you prefer top/bottom, when might you have sex in the other (non-preferred) position, and for what reasons?
   c) Does your position affect your decision for you or your partner to use a condom? How?
   d) How do you think the risk of HIV differs depending on if you're a top or a bottom?
      - Where have you learnt about this from?
14. Have you ever been worried about being infected with HIV or STI? Have you ever thought you might have HIV or an STI?
   a) What was your reaction?
   b) Did you seek help? And from who/where?
15. Where and how did you first learn about sex?
16. Can you describe the kind of people you are friends with?
   a) What is their sexuality? Do they also have sex with men and women?
   b) For example, who would you go to a bar with on a Friday/Saturday night?
17. How open are you about your sexuality/sex preferences with other people?
   a) Do your friends know that you have sex with both men and women?
   b) How do you discuss your sexuality with others?
   c) Who?
18. How do you use phone apps and the internet?
   a) Have you ever used them to look for a boyfriend/girlfriend or sex partner?
   b) Have you ever used them to look for health information?
   c) How comfortable are you with using them?
   d) How frequently do you use them?
19. Where have you received information about health, including sexual health and HIV in the past?
   a) Was this information adequate?
   b) Do you consider this a trustworthy source of information?
20. What sort of information do you want or need about health, sexual health, sexuality, relationships?

21. Have you accessed any health services in the past two years? This could be a general health service, sexual health, mental health, or HIV prevention and testing. These services could be mainstream services or specific to MSM/kathoey
    a) Thinking about the best services you have received, could you tell us what kind of service it was and why it was good?
    b) Thinking about the worst services you have received, could you tell us what kind of service it was and why it was so poor?
22. Have you ever accessed HIV or STI testing?
    a) Why or why not? If only accessed one, ask separately for both
    b) Where? Why did you choose this place?
    c) When was the last time you got tested? Do you know your HIV status?
    d) What were your impressions?
23. Whether or not you have used any services, do you think anything would help improve existing services (sexual health, HIV prevention, education)?
24. What additional/new services, support, or education are required to improve the health and well-being of men who have sex with men and women?
    a) How would you like these to look and feel?
25. What are your major goals in the next 5 years? What things you hope to achieve?
    - If do not respond, prompt them to think about family, education, work, wealth, relationships, health & wellbeing, etc.
26. Are there any other comments you would like to make about HIV prevention in Laos or your sexuality?

Appendix E-3: Discussion guide, focus groups with women

1. What social expectations are there for men and women in Laos to form relationships? Consider marriage, expectations to have children?
   a) At what age are you expected to be married by? When do you start to be judged for being single?
   b) How is it different for boys and girls?
2. How acceptable is sex before marriage?
   a) Is it different for boys and girls?
3. Where do women first learn about sex?
   a) Was that adequate? Did you feel like you needed more information before becoming sexually active?
4. Where do young men and women find partners?
   - Boyfriend versus casual sex partner?
5. Who usually initiates sex – the man or the woman?
6. Within a relationship, what are the expectations on women to provide sex?
   a) What might happen if a woman doesn't meet all of these expectations?
   b) What types of sex do men and women have?
7. How are condoms and contraception used within regular relationships? Casual relationships?
   - Consider reasons for using condoms/contraception, how often it is used, who initiates condom/contraceptive use, how it's discussed
8. What do you think about someone having more than one girlfriend or boyfriend at once?
9. Do you know of men ever finding additional partners outside of their main relationship?
   a) What sort of people would such men look to have sex with?
   b) In what situations may men look for alternative/additional sex partners? Why do mean seek extra partners?
   c) Are women usually aware of what is happening in these cases? How does she know?
   d) If a woman knew her boyfriend was seeing someone else, how would she typically respond?
10. Have you heard about straight men who also have sex with both men or kathoey?
    a) What do you think about this?
    b) Do you know any men like this personally?
    c) Hypothetically, how would you react if this were true for a man you were in a relationship with?
11. What do you understand about sexual health?
    a) How much do you worry about STIs?
    b) Is it different for men and women?
    c) Where do women seek advice on sexual health from? Do women get tested for STIs, and where?
    d) What do women want to know about STIs? Sex? Relationships?

Appendix E-4: Discussion guide, key informant interviews

1. What is your interest or involvement in health or HIV prevention services for men who have sex with men or transgender populations?
    a) General MSM or specific
    b) Paid or voluntary
    c) Management, service provider, policy, education, peer educator
    d) Length of time involved in field
2. If a service provider,
    a) What services to you provide that you consider are related to HIV prevention or health and well-being on MSM/transgender
    b) Is the service specific to MSM/transgender or mainstream with a specific MSM/transgender component?
    c) Location of services
    d) Target population
    e) Funding sources
    f) Approach or philosophy of services
3. How would you describe the current situation for HIV prevention services and health promotion for MSM/transgender in Laos? Consider:
    a) What is going well
    b) Challenges and issues
    c) What are the gaps
4. Are there specific (sub)populations in the community that you believe are not being served?
5. Can you describe any other identified needs which are not being met?
6. What changes or improvements, if any, would you like to see to current services?
7. What other additional services, support, promotion activity or anything else are required to help improve the health and wellbeing of men who have sex with men and kathoey?
    a) What is needed to make that happen (funding, policy, support)?
    b) What organisations or persons should be involved to make this happen?
8. What elements of HIV prevention health services or promotion activities are most important to the success of designing new programs to meet identified needs?