



**Elevated HIV prevalence and risk behaviors among men who have sex with men (MSM) in Vietnam: a systematic review**

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2012-001511
Article Type:	Research
Date Submitted by the Author:	29-May-2012
Complete List of Authors:	García, Macarena; Flinders University, Discipline of Public Health Meyer, Samantha; Flinders University, Discipline of Public Health Ward, Paul; Flinders University, Discipline of Public Health
<b>Primary Subject Heading</b>:	Sexual health
Secondary Subject Heading:	Public health
Keywords:	HIV, AIDS, Homosexuality, Gay men, Sexual behaviour

SCHOLARONE™  
Manuscripts

1  
2  
3 **Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM)**  
4  
5 **in Vietnam: a systematic review**  
6  
7

8 Macarena C García, MA ; Samantha B Meyer, PhD; Paul Ward, PhD  
9  
10

11  
12  
13 **ARTICLE SUMMARY**  
14

15 **Article Focus:**  
16

- 17
- 18 • Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam  
19 draws concern from the region and the world. Multiple epidemiological and behavioural  
20 studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam, the  
21 first study dating back to 1993.  
22  
23
  - 24 • The current study will review and analyze original studies on HIV prevalence and risk  
25 behaviours among men who have sex with men (MSM) in Vietnam.  
26  
27

28  
29  
30  
31  
32 **Key Messages:**  
33

- 34
- 35 • Although a systematic review of research on Vietnamese MSM and HIV epidemiology  
36 was published in 2004, the results presented only include original studies conducted up to  
37 2001. Since that time, over a dozen studies on MSM in Vietnam have been conducted  
38 and are the topic of this review.  
39
  - 40 • This work starts off where the previous systematic review left off. It finds that the  
41 majority of study findings published and/or presented at national/international  
42 conferences reveal rapidly increasing rates of HIV infection and an alarming shift in HIV  
43 epidemiology among this high-risk population in Vietnam within the last decade.  
44  
45
  - 46 • This work highlights the need for large scale targeted and MSM-friendly prevention  
47 interventions for MSM in Vietnam to address the risks posed by low consistent condom  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 use; low lubrication use; high levels of unprotected anal intercourse; and multiple and  
4  
5 concurrent sexual partnerships.  
6  
7

### 8 **Strengths and Limitations**

- 9
- 10 • The current study design employed data extraction and validation techniques. Two  
11 academics validated and independently scored the data throughout this systematic  
12 literature review. The researchers addressed and resolved conflicts in the data.  
13  
14
  - 15 • One limitation of the study included the fact that the researchers were not blinded to the  
16 purpose of the study.  
17  
18
  - 19 • Another limitation includes that only studies published in English were included; studies  
20 published in other languages were omitted.  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 **Elevated HIV prevalence and risk behaviours among men who have sex with men**  
4 **(MSM) in Vietnam: a systematic review**  
5  
6

7 Macarena C García, MA<sup>1</sup>  
8 Samantha B Meyer, PhD<sup>1</sup>  
9 Paul Ward, PhD<sup>1</sup>  
10

11 <sup>1</sup>Discipline of Public Health, Flinders University, Adelaide, Australia  
12  
13

14  
15 **Corresponding author contact details.**

16 Macarena C García  
17 US Embassy/Maseru  
18 2340 Maseru Place  
19 Dulles, VA 20189  
20 Tel +1.909.610.6005  
21 Fax +1 909 629 9011  
22 Email [macarena.c.garcia@gmail.com](mailto:macarena.c.garcia@gmail.com)  
23  
24

25  
26 **Keywords.**

27 HIV; AIDS; gay men; homosexuality; sexual behaviour.  
28  
29

30  
31 **Word count.**

32 2,990  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam: a systematic review

### ABSTRACT

*Objectives:* To review and analyze original studies on HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam.

*Design:* Systematic literature review. Comprehensive identification of material was conducted by systematic electronic searches of selected databases. Inclusion criteria included studies conducted from 2002 onwards, following a systematic review concluding in 2001 conducted by Colby, Nghia Huu, and Doussantousse. Data analysis was undertaken through the application of both the Cochrane Collaboration and ePPI Centre approaches to the synthesis of qualitative and quantitative studies.

*Setting:* Vietnam.

*Results:* Sixteen studies, undertaken during 2005-2011, were identified that met the inclusion criteria. Study results were frequently heterogeneous. The analysis showed that HIV prevalence among MSM in Vietnam has increased significantly and that protective behaviours continue at inadequately low levels.

*Conclusions:* Increasing HIV prevalence and the lack of effective protective behaviours such as consistent condom use during anal sex among MSM in Vietnam indicate a potential for a more severe HIV epidemic in the future.

### KEY MESSAGES (BOX)

Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam draws concern from the region and the world. Multiple epidemiological and behavioural studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam, the first study dating back to 1993. Although a systematic review of research on

1  
2  
3 Vietnamese MSM and HIV epidemiology was published in 2004, the results presented  
4 only include original studies conducted up to 2001. Since that time, over a dozen studies  
5 on MSM in Vietnam have been conducted and are the topic of this review.  
6  
7  
8  
9

10  
11 This work starts off where the previous systematic review left off. It finds that the  
12 majority of study findings published and/or presented at national/international  
13 conferences reveal rapidly increasing rates of HIV infection and an alarming shift in  
14 HIV epidemiology among this high-risk population in Vietnam within the last decade.  
15  
16  
17  
18  
19

20  
21 This work highlights the need for large scale targeted and MSM-friendly prevention  
22 interventions for MSM in Vietnam to address the risks posed by:  
23  
24

- 25 • low consistent condom use
  - 26 • low lubrication use
  - 27 • high levels of unprotected anal intercourse
  - 28 • multiple and concurrent sexual partnerships
- 29  
30  
31  
32  
33  
34  
35  
36  
37  
38

## 39 **BACKGROUND**

40 Male-to-male sexual contact has been an important route of HIV-1 infection since  
41 HIV/AIDS was first identified nearly 30 years ago. In the past few years, there has been  
42 increased concern about new, newly identified, and resurging epidemics of HIV  
43 infection in men who have sex with men (MSM) on a global level.[1,2] Against the  
44 backdrop of low and declining adult HIV prevalence in most countries, MSM continue  
45 to be disproportionately affected by HIV infection.[1] In Asia, MSM have 18.7 times  
46 the odds of being HIV infected compared with someone in the general adult  
47 population.[1] In recent years, scattered epidemiological research has identified high  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 HIV prevalence among MSM in several Asian countries, with varying degrees of study  
4 findings and conclusions across countries. Recent data made available through the  
5 presentation of preliminary Integrated Biological and Behavioral Survey (IBBS) results  
6 suggest an exponential increase in HIV prevalence among MSM in both Hanoi and Ho  
7 Chi Minh City, from 9.4% and 5.3% in 2006, respectively, to 20% and 14% in 2009,  
8 respectively.[3]  
9

10  
11  
12  
13  
14  
15  
16  
17  
18 Rapidly rising prevalence rates among MSM in Vietnam draws concern from the region  
19 and the world. Multiple epidemiological and behavioural studies have addressed HIV  
20 prevalence and risk behaviours among MSM in Vietnam, the first study dating back to  
21 1993.[4] Although a comprehensive and systematic review of research on Vietnamese  
22 MSM and risk factors for HIV was undertaken by Colby, Nghia Huu, and  
23 Doussantousse,[5] the results capture original studies conducted up to 2001. Since that  
24 time, over a dozen studies on MSM in Vietnam have been conducted and are the topic  
25 of this review. This systematic review sets forth a summary analysis of identified  
26 additional studies, highlighting the current state of HIV prevalence and risk behaviour  
27 among this at-risk population.  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42

## 43 **METHOD**

### 44 **Search Strategy**

45  
46 Original studies investigating HIV prevalence and risk behaviours among MSM in  
47 Vietnam were identified by searching both electronic databases (PubMed, BioMed,  
48 MEDLINE, and Google Scholar) and conference proceedings. Guided by the search  
49 protocol applied in a similar review of global scope in Baral et al,[1] the following  
50 medical subject heading (MESH) terms were used as title keywords in database  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 searches conducted: HIV AND (MSM OR homosexual AND Viet\*) OR (men who have  
4 sex with men AND Viet\*) OR (Human Immune Deficiency Syndrome), and limited to  
5 reports in the English language. Additional studies were also identified through cross-  
6 referencing, examination of the bibliographies of retrieved articles and making contact  
7 with primary researchers and authors in Vietnam.  
8  
9

10  
11  
12  
13  
14  
15  
16 Inclusion criteria included the following: studies on HIV prevalence and risk behaviour  
17 data among MSM populations in Vietnam (including homosexual, bisexual, male sex  
18 workers, and transgenders); publication in a peer-reviewed journal; and, an abstract at a  
19 conference. Gray literature was identified and included on a case-by-case basis. For  
20 example, if the studies were not published in a peer-reviewed journal, though  
21 commissioned by the Government of Vietnam and/or an International Non-  
22 Governmental Organization (NGO), the studies were included.  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33

34 Exclusion criteria were adapted from similar studies with global breadth, which resulted  
35 in a standardized method of excluding studies that did not meet rigorous pre-determined  
36 minimum standards.[1] Articles/abstracts presenting reviews of several studies were  
37 omitted, and only original study findings were included in this systematic review. The  
38 ePPI Centre quality and relevance appraisal framework,[6] discussed in the proceeding  
39 section, was used to summarize the weight of evidence each study could contribute to  
40 the review's findings, and was an important component of the exclusion criteria.  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51

### 52 **Data extraction and analysis**

53  
54 The initial search strategy yielded a total of 326 papers. This number was subsequently  
55 reduced through a number of stages, using the inclusion and exclusion criteria outlined  
56  
57  
58  
59  
60



1  
2  
3 above. However, only the final sixteen studies were assessed against the ePPI Centre  
4 quality and relevance appraisal framework.[6] The titles of the papers were reviewed for  
5 geographic and substantive relevance, which reduced the number to 12. Copies of these  
6 papers were obtained and respective bibliographies were reviewed in order to identify  
7 additional papers of relevance. Also, primary researchers and authors in Vietnam with  
8 published expertise in MSM issues were contacted which resulted in the collection of 33  
9 additional documents not available in the database searches conducted (ie, conference  
10 papers, presentations, preliminary study findings). The last step was to apply the  
11 inclusion and exclusion criteria to the additional documents retrieved. The final number  
12 of papers for review was 16.  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24

25  
26  
27 Data extraction was performed using a template designed for this purpose. For all  
28 studies in this review, the following data were extracted from original publications:  
29  
30

31  
32 1. Descriptive and Substantive Data: a) first author and year of publication; b)  
33 study site and period; c) sampling methods; d) sampling size and age of  
34 participants; e) methods and results of HIV infection detection; f) reported risk  
35 behaviours; g) outcome measures; and  
36  
37  
38

39  
40 2. ePPI Quality and Relevance Appraisal: a) trustworthiness of results judged by  
41 the quality of the study within the accepted norms for undertaking the particular  
42 type of research design used in the study; b) appropriateness of the use of the  
43 study design for addressing the systematic review's research question; c)  
44 appropriateness of focus for the research for answering the review question; and,  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 Data extraction and validation was carried out by one of authors (MCG) and abstraction  
4 methods and data extraction were independently scored and validated by a second  
5 academic (SBM). Conflicts between abstractors were settled by subsequent discussion  
6 and when appropriate, by contacting the authors of the study in question for further  
7 verification. Abstractor was not blinded to the purpose of this study. Findings from  
8 extracted studies were analyzed with a focus on exploring HIV prevalence and risk  
9 behaviour among MSM in Vietnam.  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19

20 A limitation of the study design includes the omission of literature published in  
21 languages other than English; however, efforts were made to contact MSM experts and  
22 practitioners in Vietnam to ensure review's inclusiveness and breadth.  
23  
24  
25  
26  
27  
28

## 29 **RESULTS**

30 The systematic review of original studies yielded the identification of two main themes.  
31  
32 The first theme is formal and includes government-owned data from biological and  
33 behavioural surveillance studies carried out in Vietnam in 2006 and 2009. These data  
34 are considered official and are often cited in peer reviewed publications, conference  
35 papers/presentations, and reports to the United Nations General Assembly Special  
36 Session on HIV/AIDS (UNGASS). The second theme is less formal and includes  
37 studies carried out by independent researchers, universities, and non-governmental  
38 organisations. These studies address gaps in existing knowledge about HIV risk and  
39 behaviour, and include more comprehensive data sets than those found in official  
40 surveillance reports.  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55

### 56 **Biological and behavioural surveillance**

57  
58  
59  
60

MSM are not part of the national surveillance system which tracks HIV incidence and prevalence among Female Sex Workers (FSW) and IDU, among others.[8] However, MSM are now a target group for future surveillance efforts in Vietnam, having been included in the *Estimates and Projections* Project of 2009.[9] According to Fontaine[10] at the United Nations Joint Programme for HIV/AIDS (UNAIDS) office in Vietnam, MSM have been included as a 'pilot' group in the newly established HIV sentinel surveillance plus behavioural surveillance initiative in the 2010 and 2011 rounds (data not yet available). To date, the most prominent biological and behavioural studies to include MSM as an at-risk group for HIV infection have been the two IBBS rounds, 2005-2006[11] and 2009.[3]

The 2009 IBBS sampled 1,596 MSM in Hanoi, Hai Phong, Ho Chi Minh City, and Can Tho. Data were not disaggregated between male identified MSM, and transgenders, but was disaggregated by men reporting transactional sex and those not. Along with HIV prevalence and risk behaviours, sexually transmitted infections (STI) were also measured (see table 1, below).

**Table 1: STI<sup>1</sup> prevalence among MSM (2009 IBBS)**

Province	MSM who reported transactional sex	MSM who did <u>not</u> report transactional sex
Hanoi	18.7%	13.4%
Hai Phong	No data available	7.5%
Ho Chi Minh City	21.5%	21.1%
Can Tho	17.7%	17.3%

Source: Nguyen and Tran 2010[3]

<sup>1</sup> Includes Syphilis, rectal and genital Chlamydia and Gonorrhoea

1  
2  
3  
4  
5 Although HIV prevalence was highest among MSM in Hanoi not reporting  
6 transactional sex (19.9%), prevalence in Hai Phong and Ho Chi Minh City is equally  
7 concerning, at 16.6% and 14.4% among MSM not reporting transactional sex.[3] The  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Although HIV prevalence was highest among MSM in Hanoi not reporting transactional sex (19.9%), prevalence in Hai Phong and Ho Chi Minh City is equally concerning, at 16.6% and 14.4% among MSM not reporting transactional sex.[3] The 2009 IBBS data show that MSM reporting transactional sex have a lower HIV prevalence rate in all provinces where IBBS conducted surveys, except for Can Tho where MSM reporting transactional sex had nearly a two-fold HIV prevalence rate compared to MSM who did not report transactional sex (8.9% and 5% respectively). The biological and behavioural survey from Ho Chi Minh City reveals a 16% HIV prevalence rate,[12] slightly lower than the results from the 2009 IBBS,[3] which showed a prevalence rate of 16.4%. Alarming, 47.3% of Ho Chi Minh City MSM in the Ho Chi Minh City study reported having sex with another male for transactional purposes in the last twelve months, with 16% reporting to have injected drugs in their lifetime and 41.7% of those having injected in the last year.[3] However, the 2009 IBBS shows higher rates of injecting drug use among HIV infected MSM in Hanoi, Ho Chi Minh City, and Can Tho.

According to preliminary data from the 2009 IBBS,[3] HIV prevalence among MSM in Hanoi and Ho Chi Minh City have significantly increased since the first IBBS round in 2006. Among MSM not reporting transactional sex in Hanoi, HIV prevalence nearly doubled (from 11% to 20%), and in Ho Chi Minh City HIV prevalence among MSM not reporting transactional sex nearly tripled going from 6% in 2006 to 16% in 2009.[3]

Among both MSM reporting transactional sex and those who did not, a significant percentage reported sex with regular female partners, as well as FSW. In Can Tho, Ho

1  
2  
3 Chi Minh City and Hanoi, more than 45% of MSM who reported transactional sex also  
4 reported having a regular female sexual partner (56%, 47%, and 51% respectively).  
5  
6 25% of MSM in Can Tho reported having sex with an FSW, 18% in HCMC and 20% in  
7  
8 Hanoi reported the same.[3] Conversely, sex with male sex workers was much lower  
9  
10 than sex with female sex workers among MSM reporting transactional sex.[3] MSM  
11  
12 who did not report transactional sex reported higher rates of sex with consensual  
13  
14 partner/s and sex with a regular female partner.[3] Among this particular group of MSM  
15  
16 (those not reporting transactional sex), a lower percentage reported sex with commercial  
17  
18 clients (both female and male); however, these MSM consistently reported higher rates  
19  
20 of sex with FSW across all four IBBS provinces, than sex with male sex workers  
21  
22 (MSW).[3]  
23  
24  
25  
26  
27  
28

29  
30 Unfortunately, comparisons between the data from 2006 and 2009 rounds of IBBS  
31  
32 reveal that consistent condom use with consensual partners among MSM reporting no  
33  
34 transactional sex decreased in Ho Chi Minh City, going from 38% in 2006 to 30% in  
35  
36 2009. Similarly, among this group of MSM, consistent condom use with regular female  
37  
38 partners decreased slightly, from 27% to 24%. However, dramatic increases are noted in  
39  
40 Hanoi where consistent condom use with consensual partners went from 30% in 2006 to  
41  
42 65% in 2009. There was also an increase in reported consistent condom use with regular  
43  
44 female partners among MSM in Hanoi, from 23% in 2006 to 32% in 2009.[3] Although  
45  
46 the increase in consistent condom use is important and worth noting, reported consistent  
47  
48 condom use among MSM remains relatively low compared with other at-risk groups in  
49  
50 Vietnam, such as commercial sex workers (see table 2, below).  
51  
52  
53  
54  
55

56 **Table 2: Consistent condom use: comparison between FSW and MSM (2009 IBBS)**  
57  
58  
59  
60

Province	Venue-based FSW	Street-based FSW	MSM w/consensual partner	MSM w/regular female partner
Hanoi	38%	33%	65%	32%
Hai Phong	80%	81%	No data	No data
Ho Chi Minh City	32%	23%	30%	24%
Can Tho	80%	86%	No data	No data

Source: Nguyen and Tran 2010[3]

### Epidemiological and behavioural studies

In addition to IBBS rounds, many independent researchers, organisations and universities have carried out epidemiological and behavioural studies on MSM in Vietnam. Le and Clatts [13] conducted a behavioural study in 2005 among 110 male sex workers in Hanoi. Also in 2005, Colby, Minh and Toan[14] carried out a study on HIV risk and prevalence among MSM living in rural Vietnam, the first study of its kind to study this population in a rural setting. Nguyen, Schoenbach, Huynh and Le[15] presented behavioural data the 7th Vietnamese Education Foundation Fellows and Scholars Conference, collected from over 6,000 MSM through an online forum. Colby and Mimiaga[16] have also made available preliminary findings from their study of MSW in Ho Chi Minh City, undertaken in 2009 and 2010. Finally, Nguyen[17] has released preliminary findings from a biological and behavioural survey conducted in Ho Chi Minh City in 2010, among 300 MSM, which was independent from the national 2009 IBBS. The latter two studies represent unpublished data which have not been peer reviewed and therefore are not included in this formal systematic review. However, the preliminary data from these studies are critical to understanding the HIV risk behaviours among MSM in Vietnam, especially among male sex workers, a risk group that has been historically under-studied.

1  
2  
3  
4  
5 In the Colby et al[16] study on MSW, 41% reported having sex with female/s, 8%  
6 reported having sex with FSW and 16% having sex with MSW in 2009. Those figures  
7 decreased in 2010 to 35%, 5% and 9%, respectively[16]. In comparison, Nguyen et al's  
8 online study[15] yielded very different results, with only 7.6% of 3,231 MSM surveyed  
9 reporting both male and female sexual partners. In the Colby et al study[16], 36% of  
10 MSM reported having unprotected anal intercourse in the past month in 2009, with a  
11 decrease to 22% in 2010 among the same MSM study cohort. Nearly a quarter of MSM  
12 in Colby et al's study[16] reported unprotected anal sex with male client/s in 2009 and  
13 2010 (22% and 21% respectively).  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26

27 The Hanoi MSW study by Le and Clatts[13] found that most men who sell sex in Hanoi  
28 came from other provinces (79%), with most selling sex for economic survival and the  
29 majority reporting their exclusive attraction to women (74%). The Le and Clatts  
30 study[13] also revealed that 58% of MSW had used at least one type of illicit drug in the  
31 past (58%). For those that reported illicit drug use, they most commonly used drugs in  
32 the past 90 days, and the most frequent drug used was the injection of heroin (50%). In  
33 this particular study, higher levels of condom use were reported than in the Colby et al  
34 study,[16] with 65% of MSW reporting condom use during anal sex[12]. Of the MSW  
35 reporting Heroin injection, 42% reported having insertive anal sex with their most  
36 recent sex client, with no condom use in 47% of cases.[13] One third of the 110 MSW  
37 interviewed in Hanoi reported having paid for sex in the last 90 days, with 81% buying  
38 sex from FSW and only 19% buying sex from other MSW.[13]  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Colby et al studied rural MSM populations in Khanh Hoa province, particularly focusing on HIV risk and prevalence.[14] Of the 216 MSM living in rural areas, 46% described their sexual orientation as bisexual, 9% as heterosexual and 45% as homosexual.[14] This was the first survey to confirm that MSM not only live in urban settings, but can also be found in rural areas, where the majority of Vietnam's population live, and are relatively easy to identify.[14] As with urban MSM, this study revealed that vaginal sex was relatively common, with 36% of rural MSM engaging in vaginal sex with a female partner in the previous six months. However, anal sex with casual male partners was more common, with 47% of rural MSM having engaged in anal intercourse with a casual male partner in the previous six months. All MSM in this study tested for HIV were found to be negative.[14] However, according to Lowe and Thien,[18] HIV testing among a group of 800 MSM in Khanh Hoa province revealed a prevalence rate of 1.9%. Table 3, below, provides a summary of HIV prevalence and consistent condom use across all studies included in this review.

**Table 3: HIV prevalence and consistent condom use among MSM in Vietnam**

Location	Year	Population	HIV prevalence	Consistent condom use	Reference
National	2010	MSM	No data	72% (average)	Nguyen Q, Schoenbach VJ, et al
	2009	MSM	5%	No data	Fridae MSM Sex Survey
	2009	MSM	2%	No Data	MOH; 2009 Estimates and Projections
Hanoi	2009	MSM/MSW	MSW: 14.3% MSM: 19.9%	<i>With:</i> Consensual partners: 65% Regular female partners: 32%	MOH; 2009 IBBS
	2009	MSM	3.8%	No data	MOH; 2009 Estimates and Projections
	2009	MSW	3%	<i>During anal sex acts:</i>	Le MG & Clatts M.



				65%	<i>(unpublished results)</i>
	2007	MSM/MSW	MSW: 29.1% MSM: 37.1%	<i>MSW data only:</i> Receptive anal sex: 28.6% Insertive anal sex: 52.6%	Clatts MC, Giang LM et al
	2006	MSM	9.4%	<i>With:</i> Male consensual partners: 29% Male clients: 33% MSW: 24% Female partners: 24% Female clients: 19% FSW***: 41%	MOH; 2006 IBBS
Hai Phong	2009	MSM/MSW	MSW: 14.8% MSM: 16.6%	No data	MOH; 2009 IBBS
Ho Chi Minh City	2011	MSW	6.3%	No data	Colby D & Mimiaga M ( <i>unpublished results</i> )
	2010	MSM	16%	<i>During anal sex:</i> Always: 29.7% Almost always: 37.0%	Nguyen ( <i>unpublished results</i> )
	2009	MSM/MSW	MSW: 16.4% MSM: 14.4%	<i>With:</i> Consensual partners: 30% Regular female partners: 24%	MOH; 2009 IBBS
	2009	MSM	9.4%	No data	MOH; 2009 Estimates and Projections
	2008	MSM	Total: 8% Transgender: 6.8% Non-transgender: 7% Bisexual: 13.5% Sex worker: 33.3%	<i>With:</i> Casual partners: 50.9% Regular partners: 34.2% Male sex workers: 57.9% Foreign partners: 58.1%	Nguyen TA, Nguyen HT, et al
	2006	MSM	5.3%	<i>With:</i> Male consensual partners: 37% Male clients: 51% MSW: 32% Female partners: 17% Female clients: 40% FSW: 47%	MOH; 2006 IBBS
	2005	MSM	5.8%	40%	Family Health International
Can Tho	2009	MSM/MSW	MSW: 8.9% MSM: 5.0%	No data	MOH; 2009 IBBS

Khanh Hoa	2008	MSM	0%	Urban: 68% Rural: 58%	Colby D, Minh TT, et al
--------------	------	-----	----	--------------------------	----------------------------

## DISCUSSION

In Vietnam, the Ho Chi Minh City AIDS Committee[19] estimates that by 2012, the number of new HIV infections contracted by MSM in Ho Chi Minh city each year is projected to be higher than the annual number of new infections in each of the other two identified high risk groups in the city, IDU and FSW. Behavioral data also suggest reason for concern.

Although HIV counselling and testing is increasing among IDU and FSW, it remains inadequately low among MSM, and has not increased since the 2006 round of IBBS which may suggest the need for alternative testing strategies for this at-risk group.[3]

While male-to-male sex is preferred by most of those surveyed in the studies identified above, significant numbers of MSM are also having female sexual partners due to continued family and societal pressure to conform to masculine norms. The low level of consistent condom use with these women, coupled with already relatively high rates of HIV prevalence among MSM and low rates of protective behaviour with other male sex partners reveals a potential for HIV epidemics among MSM in Vietnam to reach a broader population.[18]

Nguyen et al[15] found that unprotected sex among surveyed MSM correlated with low perception about risk of HIV transmission, HIV prevalence and the number of casual sex partners. The findings of this review identify a need for greater HIV awareness among this group, as well as programs delivering consistent and segmented prevention

1  
2  
3 messages. Coupled with HIV awareness raising and prevention messages, the data  
4  
5 analyzed in this review point to the need for greater access to MSM-friendly HIV  
6  
7 services, such as HIV testing and counselling, condom/lubrication provision, HIV care  
8  
9 and treatment, which would contribute to slowing the pace of HIV infections among  
10  
11 this high risk group. For example, given that HIV diagnosis often leads to safer sexual  
12  
13 practices, according to the findings of an original study by Nguyen and Kiethly[20]  
14  
15 among People Living with HIV (PLHIV) in Vietnam, testing and counselling services  
16  
17 need to be expanded and segmented based on the needs of each high risk group in order  
18  
19 to increase HIV testing uptake.  
20  
21

22  
23 Findings from this review suggest the need to identify and appropriately address the  
24  
25 socio-cultural and economic aspects that influence HIV infection among MSM.[21]  
26  
27 Currently, MSM continue to report not being treated equally when they present  
28  
29 themselves to public service providers, such as health clinics, schools, or public  
30  
31 administration offices. Stigma continues to be a significant barrier to accessing basic  
32  
33 and necessary services.[22] Awareness raising campaigns should also be segmented for  
34  
35 greater effectiveness, with the delivery of directed information and messaging to  
36  
37 families, government entities, and the Vietnamese population.  
38  
39  
40  
41  
42  
43  
44

#### 45 **ACKNOWLEDGEMENTS**

46  
47 Accurate data can be challenging to generate and disseminate in Vietnam. However, the  
48  
49 UNAIDS/Vietnam country office and the PEPFAR/Vietnam team have diligently  
50  
51 worked with the Government of Vietnam to improve surveillance, MARP mapping and  
52  
53 estimates and projections. I would like to thank Christopher Fontaine at  
54  
55 UNAIDS/Vietnam and Dr Nguyen Cuong Quoc at FHI/Vietnam for their valuable  
56  
57  
58  
59  
60

1  
2  
3 expertise and timely provision of difficult-to-access data and documentation on MSM in  
4  
5 Vietnam.  
6  
7  
8

### 9 10 **CONFLICT OF INTEREST DISCLOSURE STATEMENT**

11 None of the authors of the above manuscript has declared any conflict of interest within  
12  
13 the last three years which may arise from being named as an author on this manuscript.  
14  
15

### 16 17 **SOURCES OF SUPPORT**

18 This study was funded in part by Flinders University post-graduate grants and  
19  
20 independent funding.  
21  
22  
23  
24  
25  
26

### 27 28 **CONTRIBUTORSHIP**

29 MCG designed data extraction tools, extracted data, analysed and scored data, and  
30  
31 drafted and revised the paper. She is guarantor. SBM scored and validated the extracted  
32  
33 data, contributed to article revisions, and provided final approval of the version to be  
34  
35 published. PW provided study design, contributed to article revisions, and provided  
36  
37 final approval of the version to be published.  
38  
39  
40  
41

### 42 43 **DATA SHARING**

44 There is no additional data available.  
45  
46  
47  
48

### 49 50 **REFERENCES**

- 51 1 Barald S, Sifakis F, Cleghorn F, et al. Elevated risk for HIV Infection among men  
52  
53 who have sex with men in low- and middle-income countries 2000–2006: A  
54  
55 Systematic Review. *PLoS Med* 2007;4:e339.  
56  
57  
58  
59  
60

- 2 van Griensven F, van Wijngaardenc JW, Barald S, et al. The global epidemic of  
3 HIV infection among men who have sex with men. *Curr Opin HIV AIDS* 2009;**4**:  
4 300–307.
- 5  
6  
7  
8  
9  
10  
11  
12  
13  
14 3 Nguyen AT, Tran VH. HIV/STI Integrated Biological and Behavioral Surveillance  
15 in Vietnam (IBBS), 2009 (Round 2). *4th National Scientific Conference on*  
16 *HIV/AIDS; 1-2 December 2009, Hanoi, Vietnam*. Hanoi: National Institute of  
17 Hygiene and Epidemiology (NIHE) and Vietnam Administration for HIV/AIDS  
18 Control (VAAC), Ministry of Health; 2010.
- 19  
20  
21  
22  
23  
24  
25  
26  
27 4 Franklin, B. *The risk of AIDS in Vietnam: An Audience Analysis of Urban Men and*  
28 *Sex Workers, with Guidelines for Prevention*. Hanoi: CARE International in  
29 Vietnam 1993.
- 30  
31  
32  
33  
34  
35  
36 5 Colby D, Cao NH, Doussantousse S. Men who have sex with men and HIV in  
37 Vietnam: a review. (Special issue: HIV prevention for Asian and Pacific Islander  
38 men who have sex with men: Identifying needs for the Asia Pacific Region.). *AIDS*  
39 *Educ Prev* 2004;**16**:45–54.
- 40  
41  
42  
43  
44  
45  
46  
47 6 ePPI Centre. *Quality and relevance appraisal framework for systematic reviews*.  
48 *London2011*. <http://eppi.ioe.ac.uk/> (accessed 4 December 2011).
- 49  
50  
51  
52  
53  
54 7 Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA Statement for reporting  
55 systematic reviews and meta-analyses of studies that evaluate health care  
56  
57  
58  
59  
60

- 1  
2  
3 interventions: explanation and elaboration. *PLoS Med* 2009;6:1–28.  
4  
5  
6  
7  
8 8 Socialist Republic of Vietnam. *UNGASS Country Progress Report*. Hanoi,  
9  
10 Vietnam: United Nations 2010.  
11  
12  
13  
14 9 Vietnam Administration for AIDS Control and Prevention. *Vietnam HIV/AIDS*  
15  
16 *Estimates and Projections, 2007-2012*. Hanoi, Vietnam: Vietnam Ministry of  
17  
18 Health 2009.  
19  
20  
21  
22  
23 10 Fontaine C. Policy environment and MSM in Vietnam. Personal communication.  
24  
25 (Garcia MC, Hanoi: 2011).  
26  
27  
28  
29  
30 11 Vietnam Ministry of Health. *Results from the HIV/STI Integrated Biological and*  
31  
32 *Behavioral Surveillance (IBBS) in Vietnam, 2005-2006*. Hanoi: Ministry of Health  
33  
34 2006.  
35  
36  
37  
38  
39 12 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
40  
41 City. (Unpublished).  
42  
43  
44  
45 13 Le MG, Clatts M. *Men selling sex to other men in Hanoi: findings from an ethno-*  
46  
47 *epidemiological study*. Hanoi: UNAIDS; 2009. [www.unaids.org.vn](http://www.unaids.org.vn) (accessed 13  
48  
49 December 2011).  
50  
51  
52  
53  
54 14 Colby D, Minh TT, Toan TT. Down on the farm: homosexual behaviour, HIV risk  
55  
56 and HIV prevalence in rural communities in Khanh Hoa province, Vietnam. *Sex*  
57  
58  
59  
60

- 1  
2  
3 *Transm Infect* 2008;**84**:439–443.  
4  
5  
6  
7  
8 15 Nguyen Q, Schoenbach VJ, Le B, et al. HIV risk behaviors of Vietnamese men  
9 who have sex with men: results of a national online survey. In: *The 7th Vietnamese*  
10 *Education Foundation Fellows and Scholars Conference; 3-5 January 2010*; New  
11 York: Rensselaer Polytechnic Institute 2010.  
12  
13  
14  
15  
16  
17  
18 16 Colby D, Mimiaga M. Results of research on male sex workers in Ho Chih Minh  
19 City. (Unpublished).  
20  
21  
22  
23  
24  
25 17 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
26 City. (Unpublished).  
27  
28  
29  
30  
31  
32 18 Lowe D, Thien P. *Rapid situation and response assessment of HIV and AIDS*  
33 *programs for men who have sex with men in Vietnam. DRAFT REPORT*. Hanoi,  
34 Vietnam: Vietnam Ministry of Health - Vietnam Administration for AIDS Control  
35 and Prevention (VAAC) 2010.  
36  
37  
38  
39  
40  
41  
42  
43 19 Ho Chi Minh City Provincial AIDS Committee. The HIV epidemic in Ho Chi  
44 Minh City: Where is it going? Ho Chi Minh City, Vietnam: USAID 2006.  
45  
46  
47  
48  
49  
50 20 Nguyen NT, Keithly SC. A qualitative study on the sexual behaviour of people  
51 living with HIV in Vietnam. *AIDS Care* Published Online First: 24 January 2012.  
52 doi:10.1080/09540121.2011.644230  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 21 Clatts MC, Giang LM, Goldsamt LA, et al. Male sex work and HIV risk among  
4 young heroin users in Hanoi, Vietnam. *Sex Health* 2007;4:261–267.  
5  
6  
7  
8  
9  
10 22 Tran TN, Le TMP, Nguyen TV. *RESEARCH REPORT: MSM in Vietnam - social*  
11 *stigma and consequences*. Hanoi, Vietnam: STDs/HIV/AIDS Prevention Center  
12 (SHAPC) 2009.  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3 **Figure Legend**  
4

5 **Figure 1: Literature search flow diagram[7]**  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

For peer review only

## PRISMA 2009 Checklist

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49

Section/topic	#	Checklist item	Reported on page #
<b>TITLE</b>			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Cover
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2, 3
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3, 4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3, 4
<b>METHODS</b>			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	N/A
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4, 5
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4, 5
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4, 5
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4, 5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5 - 7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5 - 7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	N/A
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$ for each meta-analysis).	N/A

For peer review only - <http://bmjopen.bmj.com/site/about/guidelines.xhtml>

## PRISMA 2009 Checklist

Page 1 of 2

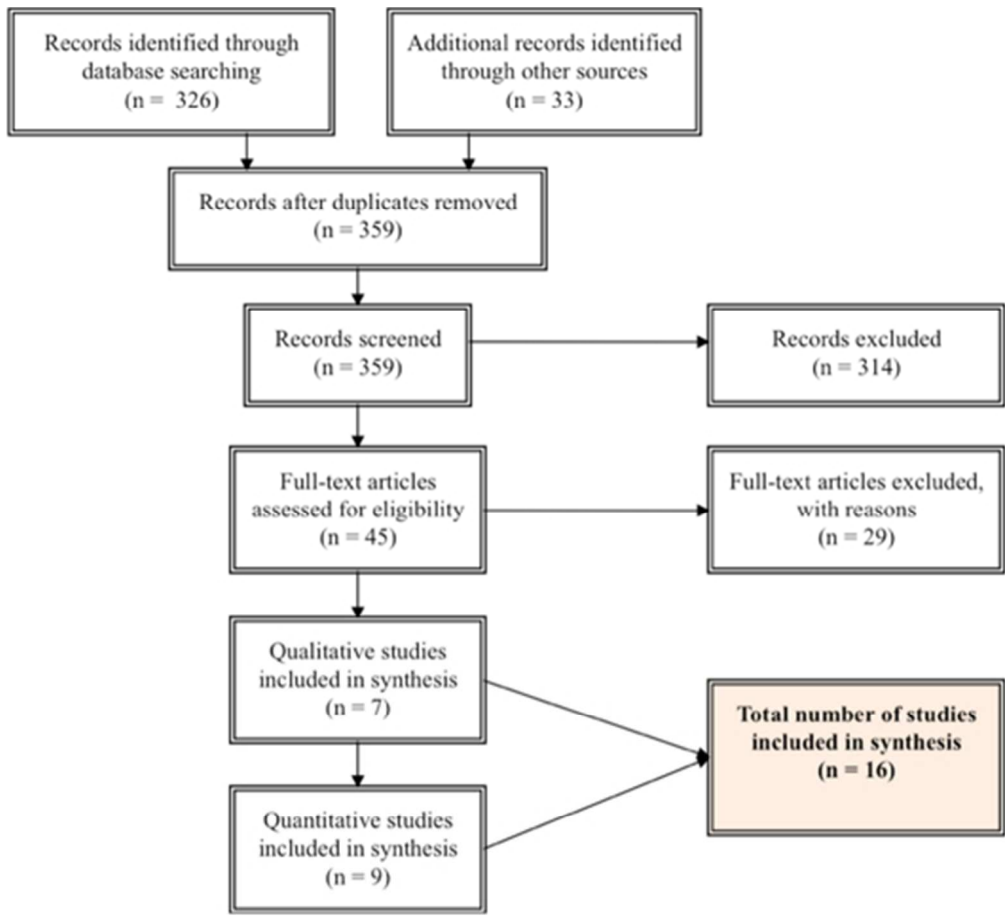
Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	7
<b>RESULTS</b>			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	5 - 7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	N/A
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	14 - 15
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	5 - 7
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
<b>DISCUSSION</b>			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	8 - 17
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	5 - 7
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	8 - 17
<b>FUNDING</b>			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	17

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

Page 2 of 2

For peer review only - <http://bmjopen.bmj.com/site/about/guidelines.xhtml>

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



186x169mm (72 x 72 DPI)

only



**Elevated HIV prevalence and risk behaviors among men who have sex with men (MSM) in Vietnam: a systematic review**

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2012-001511.R1
Article Type:	Research
Date Submitted by the Author:	16-Aug-2012
Complete List of Authors:	García, Macarena; Flinders University, Discipline of Public Health Meyer, Samantha; Flinders University, Discipline of Public Health Ward, Paul; Flinders University, Discipline of Public Health
<b>Primary Subject Heading</b>:	Sexual health
Secondary Subject Heading:	Public health
Keywords:	HIV, AIDS, Homosexuality, Gay men, Sexual behaviour

SCHOLARONE™  
Manuscripts

1  
2  
3 **Elevated HIV prevalence and risk behaviours among men who have sex with men**  
4 **(MSM) in Vietnam: a systematic review**  
5  
6

7 Macarena C García, MA<sup>1</sup>  
8 Samantha B Meyer, PhD<sup>1</sup>  
9 Paul Ward, PhD<sup>1</sup>  
10

11 <sup>1</sup>Discipline of Public Health, Flinders University, Adelaide, Australia  
12  
13

14  
15 **Corresponding author contact details.**

16 Macarena C García  
17 US Embassy/Maseru  
18 2340 Maseru Place  
19 Dulles, VA 20189  
20 Tel +1.909.610.6005  
21 Fax +1 909 629 9011  
22 Email [macarena.c.garcia@gmail.com](mailto:macarena.c.garcia@gmail.com)  
23  
24

25  
26 **Keywords.**

27 HIV; AIDS; gay men; homosexuality; sexual behaviour.  
28  
29

30  
31 **Word count.**

32 3,730 (including tables; excluding abstract, key messages box and acknowledgements)  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam: a systematic review

### ABSTRACT

*Objectives:* To review and analyze original studies on HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam.

*Design:* Systematic literature review. Comprehensive identification of material was conducted by systematic electronic searches of selected databases. Inclusion criteria included studies conducted from 2002 onwards, following a systematic review concluding in 2001 conducted by Colby, Nghia Huu, and Doussantousse. Data analysis was undertaken through the application of both the Cochrane Collaboration and ePPI Centre approaches to the synthesis of qualitative and quantitative studies.

*Setting:* Vietnam.

*Results:* Sixteen studies, undertaken during 2005-2011, were identified that met the inclusion criteria. The analysis showed that HIV prevalence among MSM in Vietnam has increased significantly (from 9.4 in 2006 to 20% in 2010 in Hanoi, for instance) and that protective behaviours, such as condom use and HIV testing and counselling, continue at inadequately low levels.

*Conclusions:* Increasing HIV prevalence and the lack of effective protective behaviours such as consistent condom use during anal sex among MSM in Vietnam indicate a potential for a more severe HIV epidemic in the future unless targeted and segmented comprehensive HIV prevention strategies for MSM in Vietnam are designed and programs implemented.

### KEY MESSAGES (BOX)

1  
2  
3 Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam  
4  
5 draws concern from the region and the world. Multiple epidemiological and behavioural  
6  
7 studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam,  
8  
9 the first study dating back to 1993. Although a systematic review of research on  
10  
11 Vietnamese MSM and HIV epidemiology was published in 2004, the results presented  
12  
13 only include original studies conducted up to 2001. Since that time, over a dozen studies  
14  
15 on MSM in Vietnam have been conducted and are the topic of this review.  
16  
17

18  
19  
20 This work starts off where the previous systematic review left off. It finds that the  
21  
22 majority of study results published and/or presented at national/international  
23  
24 conferences reveal rapidly increasing rates of HIV infection and an alarming shift in  
25  
26 HIV epidemiology among this high-risk population in Vietnam within the last decade.  
27  
28

29  
30  
31 This work highlights the need for large scale targeted and MSM-friendly prevention  
32  
33 interventions for MSM in Vietnam to address the risks posed by:  
34

- 35 • low levels of consistent condom use
- 36
- 37 • low lubrication use
- 38
- 39 • high levels of unprotected anal intercourse
- 40
- 41 • multiple and concurrent sexual partnerships
- 42
- 43
- 44
- 45
- 46

## 47 **BACKGROUND**

48  
49 The HIV/AIDS epidemic in Vietnam is still in a concentrated phase, with the highest  
50  
51 prevalence rates found among specific populations at higher risk; these include injecting  
52  
53 drug users (IDU), female sex workers (FSW) and MSM. As documented by the  
54  
55 Ministry of Health Estimates and Projections Project Report,[1] MSM populations are  
56  
57  
58  
59  
60



1  
2  
3 larger than those of the other groups, and are primarily concentrated in urban areas such  
4  
5 as Ho Chi Minh City (64,247), the Red River Delta (60,698), the Mekong River Delta  
6  
7 (73,727) and Hanoi (35,436). In these urban centers, IDU and FSW population  
8  
9 estimates are lower.  
10

11  
12  
13  
14 According to UNAIDS,[2] prevalence in the general population is estimated at 0.53%  
15  
16 and an estimated 243,000 Vietnamese were living with HIV and/or AIDS in 2009. Of  
17  
18 all reported HIV cases, 78.9% are in the age group 20-39, with males accounting for  
19  
20 85.2% of total reported HIV cases. The average age of people living with HIV is  
21  
22 decreasing and heterosexual transmission is becoming more significant.[2]  
23  
24

25  
26  
27 Unlike Thailand to the west, the epidemic in Vietnam is not as severe. UNAIDS[2]  
28  
29 reports that the epidemics in Ho Chi Minh City (HCMC) and the north-east coast  
30  
31 initiated earlier, while epidemics in other parts of the country are much more recent.  
32  
33 According to UNAIDS,[2] "this variability has resulted in a geographic concentration of  
34  
35 HIV cases in large cities and provinces where the local HIV epidemic in groups of  
36  
37 IDUs, FSWs and MSM is substantial."  
38  
39

40  
41  
42  
43 Male-to-male sexual contact has been an important route of HIV-1 infection since  
44  
45 HIV/AIDS was first identified nearly 30 years ago. In the past few years, there has been  
46  
47 increased concern about new, newly identified, and resurging epidemics of HIV  
48  
49 infection in men who have sex with men (MSM) on a global level.[3,4] Against the  
50  
51 backdrop of low and declining adult HIV prevalence in most countries, MSM continue  
52  
53 to be disproportionately affected by HIV infection.[3] In Asia, MSM have 18.7 times  
54  
55 the odds of being HIV infected compared with someone in the general adult  
56  
57  
58  
59  
60

1  
2  
3 population.[3] In recent years, scattered epidemiological research has identified high  
4  
5 HIV prevalence among MSM in several Asian countries, with varying degrees of study  
6  
7 findings and conclusions across countries. Recent data made available through the  
8  
9 presentation of preliminary Integrated Biological and Behavioral Survey (IBBS) results  
10  
11 suggest an exponential increase in HIV prevalence among MSM in both Hanoi and Ho  
12  
13 Chi Minh City, from 9.4% and 5.3% in 2006, respectively, to 20% and 14% in 2009,  
14  
15 respectively.[5]  
16  
17  
18  
19

20  
21 Rapidly rising prevalence rates among MSM in Vietnam draws concern from the region  
22  
23 and the world. Multiple epidemiological and behavioural studies have addressed HIV  
24  
25 prevalence and risk behaviours among MSM in Vietnam, the first study dating back to  
26  
27 1993.[6] Although a comprehensive and systematic review of research on Vietnamese  
28  
29 MSM and risk factors for HIV was undertaken by Colby, Nghia Huu, and  
30  
31 Doussantousse,[7] the results capture original studies conducted up to 2001. Since that  
32  
33 time, over a dozen biological and behavioural studies on MSM in Vietnam have been  
34  
35 conducted and are the topic of this review. This systematic review sets forth a summary  
36  
37 analysis of identified additional studies, highlighting the current state of HIV prevalence  
38  
39 and risk behaviour among this at-risk population.  
40  
41  
42  
43  
44

## 45 **METHOD**

### 46 **Search Strategy**

47  
48 Original studies investigating HIV prevalence and risk behaviours among MSM in  
49  
50 Vietnam were identified by searching both electronic databases (PubMed, BioMed,  
51  
52 MEDLINE, and Google Scholar) and conference proceedings. Guided by the search  
53  
54 protocol applied in a similar review of global scope in Baral et al,[3] the following  
55  
56  
57  
58  
59  
60

1  
2  
3 medical subject heading (MESH) terms were used as title keywords in database  
4 searches conducted: HIV AND (MSM OR homosexual AND Viet\*) OR (men who have  
5 sex with men AND Viet\*) OR (Human Immune Deficiency Syndrome), and limited to  
6 reports in the English language. Additional studies were also identified through cross-  
7 referencing, examination of the bibliographies of retrieved articles and making contact  
8 with primary researchers and authors in Vietnam.  
9

10  
11  
12 Inclusion criteria included the following: studies on HIV prevalence and risk behaviour  
13 data among MSM populations in Vietnam (including homosexual, bisexual, male sex  
14 workers, and transgenders); publication in a peer-reviewed journal; and, an abstract at a  
15 conference. Gray literature was identified and included on a case-by-case basis. For  
16 example, if the studies were not published in a peer-reviewed journal, though  
17 commissioned by the Government of Vietnam and/or an International Non-  
18 Governmental Organization (NGO), the studies were included.  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35

36 Exclusion criteria were adapted from similar studies with global breadth, which resulted  
37 in a standardized method of excluding studies that did not meet rigorous pre-determined  
38 minimum standards.[3] Articles/abstracts presenting reviews of several studies were  
39 omitted, and only original study findings were included in this systematic review. The  
40 ePPI Centre quality and relevance appraisal framework,[8] discussed in the proceeding  
41 section, was used to summarize the weight of evidence each study could contribute to  
42 the review's findings, and was an important component of the exclusion criteria.  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53

#### 54 **Data extraction and analysis**

55  
56  
57  
58  
59  
60

1  
2  
3 The initial search strategy yielded a total of 326 papers. This number was subsequently  
4 reduced through a number of stages, using the inclusion and exclusion criteria outlined  
5 above. However, only the final sixteen studies were assessed against the ePPI Centre  
6 quality and relevance appraisal framework.[8] The titles of the papers were reviewed for  
7 geographic and substantive relevance, which reduced the number to 12. Copies of these  
8 papers were obtained and respective bibliographies were reviewed in order to identify  
9 additional papers of relevance. Primary researchers and authors in Vietnam with  
10 published expertise in MSM issues were contacted which resulted in the collection of 33  
11 additional documents not available in the database searches conducted (ie, conference  
12 papers, presentations, preliminary study findings). The last step was to apply the  
13 inclusion and exclusion criteria to the additional documents retrieved. The final number  
14 of papers for review was 16.

15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32 Data extraction was performed using a template designed for this purpose. For all  
33 studies in this review, the following data were extracted from original publications:

34  
35  
36 1. Descriptive and Substantive Data: a) first author and year of publication; b)  
37 study site and period; c) sampling methods; d) sampling size and age of  
38 participants; e) methods and results of HIV infection detection; f) reported risk  
39 behaviours; g) outcome measures; and

40  
41  
42  
43  
44 2. ePPI Quality and Relevance Appraisal: a) trustworthiness of results judged by  
45 the quality of the study within the accepted norms for undertaking the particular  
46 type of research design used in the study; b) appropriateness of the use of the  
47 study design for addressing the systematic review's research question; c)  
48 appropriateness of focus for the research for answering the review question; and,  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
60 d) judgment of overall weight of evidence based on the assessments made for  
each of the criteria above.

1  
2  
3 Data extraction and validation was carried out by one of authors (MCG) and abstraction  
4 methods and data extraction were independently scored and validated by a second  
5 academic (SBM). Conflicts between abstractors were settled by subsequent discussion  
6 and when appropriate, by contacting the authors of the study in question for further  
7 verification. Abstractor and reviewers were not blinded to the purpose of this study, nor  
8 blinded to author affiliations. Findings from extracted studies were analyzed with a  
9 focus on exploring HIV prevalence and risk behaviour among MSM in Vietnam.  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19

## 20 21 **RESULTS**

22 The systematic review of original studies yielded the identification of two main themes.  
23 The first theme is formal and includes government-owned data from biological and  
24 behavioural surveillance studies carried out in Vietnam in 2006 and 2009. These data  
25 are considered official and are often cited in peer reviewed publications, conference  
26 papers/presentations, and reports to the United Nations General Assembly Special  
27 Session on HIV/AIDS (UNGASS). The second theme is less formal and includes  
28 studies carried out by independent researchers, universities, and non-governmental  
29 organisations. These studies address gaps in existing knowledge about HIV risk and  
30 behaviour, and include more comprehensive data sets than those found in official  
31 surveillance reports.  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47

### 48 **Biological and behavioural surveillance**

49 MSM are not part of the national surveillance system which tracks HIV incidence and  
50 prevalence among Female Sex Workers (FSW) and IDU, among others.[10] However,  
51 MSM are now a target group for future surveillance efforts in Vietnam, having been  
52 included in the *Estimates and Projections* Project of 2009.[1] According to  
53  
54  
55  
56  
57  
58  
59  
60

Fontaine[11] at the United Nations Joint Programme for HIV/AIDS (UNAIDS) office in Vietnam, MSM have been included as a 'pilot' group in the newly established HIV sentinel surveillance plus behavioural surveillance initiative in the 2010 and 2011 rounds (data not yet available). To date, the most prominent biological and behavioural studies to include MSM as an at-risk group for HIV infection have been the two IBBS rounds, 2005-2006[12] and 2009.[5]

The 2009 IBBS sampled 1,596 MSM in Hanoi, Hai Phong, Ho Chi Minh City, and Can Tho. Data were not disaggregated between male identified MSM, and transgenders, but was disaggregated by men reporting transactional sex and those not. Along with HIV prevalence and risk behaviours, sexually transmitted infections (STI) were also measured (see table 1, below).

**Table 1: STI<sup>1</sup> prevalence among MSM (2009 IBBS)**

Province	MSM who reported transactional sex	MSM who did <u>not</u> report transactional sex
Hanoi	18.7%	13.4%
Hai Phong	No data available	7.5%
Ho Chi Minh City	21.5%	21.1%
Can Tho	17.7%	17.3%

Source: Nguyen and Tran 2010[5]

Although HIV prevalence was highest among MSM in Hanoi not reporting transactional sex (19.9%), prevalence in Hai Phong and Ho Chi Minh City is equally concerning, at 16.6% and 14.4% among MSM not reporting transactional sex.[5] The 2009 IBBS data show that MSM reporting transactional sex have a lower HIV

<sup>1</sup> Includes Syphilis, rectal and genital Chlamydia and Gonorrhoea

1  
2  
3 prevalence rate in all provinces where IBBS conducted surveys, except for Can Tho  
4  
5 where MSM reporting transactional sex had nearly a two-fold HIV prevalence rate  
6  
7 compared to MSM who did not report transactional sex (8.9% and 5% respectively).  
8  
9 The biological and behavioural survey from Ho Chi Minh City reveals a 16% HIV  
10  
11 prevalence rate,[13] slightly lower than the results from the 2009 IBBS,[5] which  
12  
13 showed a prevalence rate of 16.4%. Approximately 47% of Ho Chi Minh City MSM in  
14  
15 the Ho Chi Minh City study reported having sex with another male for transactional  
16  
17 purposes in the last twelve months, with 16% reporting to have injected drugs in their  
18  
19 lifetime and 41.7% of those having injected in the last year.[5] However, the 2009 IBBS  
20  
21 shows higher rates of injecting drug use among HIV infected MSM in Hanoi, Ho Chi  
22  
23 Minh City, and Can Tho.  
24  
25  
26  
27  
28

29  
30 According to preliminary data from the 2009 IBBS,[5] HIV prevalence among MSM in  
31  
32 Hanoi and Ho Chi Minh City has significantly increased since the first IBBS round in  
33  
34 2006. Among MSM not reporting transactional sex in Hanoi, HIV prevalence nearly  
35  
36 doubled (from 11% to 20%), and in Ho Chi Minh City HIV prevalence among MSM  
37  
38 not reporting transactional sex nearly tripled going from 6% in 2006 to 16% in 2009.[5]  
39  
40  
41  
42

43 Among both MSM reporting transactional sex and those who did not, a significant  
44  
45 percentage reported sex with regular female partners, as well as FSW. In Can Tho, Ho  
46  
47 Chi Minh City and Hanoi, more than 45% of MSM who reported transactional sex also  
48  
49 reported having a regular female sexual partner (56%, 47%, and 51% respectively).  
50  
51 25% of MSM in Can Tho reported having sex with an FSW, 18% in HCMC and 20% in  
52  
53 Hanoi reported the same.[5] Conversely, sex with male sex workers was much lower  
54  
55 than sex with female sex workers among MSM reporting transactional sex.[5] MSM  
56  
57  
58  
59  
60

who did not report transactional sex reported higher rates of sex with consensual partner/s and sex with a regular female partner.[5]

Comparisons between the data from 2006 and 2009 rounds of IBBS reveal that consistent condom use with consensual partners among MSM reporting no transactional sex decreased in Ho Chi Minh City, going from 38% in 2006 to 30% in 2009. Similarly, among this group of MSM, consistent condom use with regular female partners decreased slightly, from 27% to 24%. However, dramatic increases are noted in Hanoi where consistent condom use with consensual partners went from 30% in 2006 to 65% in 2009. There was also an increase in reported consistent condom use with regular female partners among MSM in Hanoi, from 23% in 2006 to 32% in 2009.[5] Although the increase in consistent condom use is important and worth noting, reported consistent condom use among MSM remains low and comparable to low condom-use among other at-risk groups in Vietnam, such as commercial sex workers (see table 2, below).

**Table 2: Consistent condom use: comparison between FSW and MSM (2009 IBBS)**

Province	Venue-based FSW	Street-based FSW	MSM w/consensual partner	MSM w/regular female partner
Hanoi	38%	33%	65%	32%
Ho Chi Minh City	32%	23%	30%	24%

*Source: Nguyen and Tran 2010[5]*

### **Epidemiological and behavioural studies**

In addition to IBBS rounds, many independent researchers, organisations and universities have carried out epidemiological and behavioural studies on MSM in Vietnam. Le and Clatts [14] conducted a behavioural study in 2005 among 110 male sex workers in Hanoi. Also in 2005, Colby, Minh and Toan[15] carried out a study on



1  
2  
3 HIV risk and prevalence among MSM living in rural Vietnam, the first study of its kind  
4  
5 to study this population in a rural setting. Nguyen, Schoenbach, Huynh and Le[16]  
6  
7 presented behavioural data the 7th Vietnamese Education Foundation Fellows and  
8  
9 Scholars Conference, collected from over 6,000 MSM through an online forum. Colby  
10  
11 and Mimiaga[17] have also made available preliminary findings from their study of  
12  
13 MSW in Ho Chi Minh City, undertaken in 2009 and 2010. Finally, Nguyen[18] has  
14  
15 released preliminary findings from a biological and behavioural survey conducted in Ho  
16  
17 Chi Minh City in 2010, among 300 MSM, which was independent from the national  
18  
19 2009 IBBS. The latter two studies represent unpublished data which have not been peer  
20  
21 reviewed and therefore are not included in this formal systematic review. However, the  
22  
23 preliminary data from these studies are critical to understanding the HIV risk  
24  
25 behaviours among MSM in Vietnam, especially among male sex workers, a risk group  
26  
27 that has been historically under-studied.  
28  
29  
30  
31  
32

33  
34 In the Colby et al[17] study on MSW, 41% reported having sex with female/s, 8%  
35  
36 reported having sex with FSW and 16% having sex with MSW in 2009. Those figures  
37  
38 decreased in 2010 to 35%, 5% and 9%, respectively. [17] In comparison, Nguyen et al's  
39  
40 online study[16] yielded very different results, with only 7.6% of 3,231 MSM surveyed  
41  
42 reporting both male and female sexual partners. In the Colby et al study,[17] 36% of  
43  
44 MSM reported having unprotected anal intercourse in the past month in 2009, with a  
45  
46 decrease to 22% in 2010 among the same MSM study cohort. Nearly a quarter of MSM  
47  
48 in Colby et al's study[17] reported unprotected anal sex with male client/s in 2009 and  
49  
50 2010 (22% and 21% respectively).  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 The Hanoi MSW study by Le and Clatts[14] found that most men who sell sex in Hanoi  
4 came from other provinces (79%), with most selling sex for economic survival and the  
5 majority reporting their exclusive attraction to women (74%). The Le and Clatts  
6 study[14] also revealed that 58% of MSW had used at least one type of illicit drug in the  
7 past (58%). For those that reported illicit drug use, they most commonly used drugs in  
8 the past 90 days, and the most frequent drug used was the injection of heroin (50%). In  
9 this particular study, higher levels of condom use were reported than in the Colby et al  
10 study,[17] with 65% of MSW reporting condom use during anal sex. [13] Of the MSW  
11 reporting Heroin injection, 42% reported having insertive anal sex with their most  
12 recent sex client, with no condom use in 47% of cases.[14] One third of the 110 MSW  
13 interviewed in Hanoi reported having paid for sex in the last 90 days, with 81% buying  
14 sex from FSW and only 19% buying sex from other MSW.[14]

15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32 Colby et al studied rural MSM populations in Khanh Hoa province, particularly  
33 focusing on HIV risk and prevalence.[15] Of the 216 MSM living in rural areas, 46%  
34 described their sexual orientation as bisexual, 9% as heterosexual and 45% as  
35 homosexual.[15] This was the first survey to confirm that MSM not only live in urban  
36 settings, but can also be found in rural areas, where the majority of Vietnam's  
37 population live, and are relatively easy to identify.[15] As with urban MSM, this study  
38 revealed that vaginal sex was relatively common, with 36% of rural MSM engaging in  
39 vaginal sex with a female partner in the previous six months. However, anal sex with  
40 casual male partners was more common, with 47% of rural MSM having engaged in  
41 anal intercourse with a casual male partner in the previous six months. All MSM in this  
42 study tested for HIV were found to be negative.[15] However, according to Lowe and  
43 Thien,[19] HIV testing among a group of 800 MSM in Khanh Hoa province revealed a  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

prevalence rate of 1.9%. Table 3, below, provides a summary of HIV prevalence and consistent condom use across all studies included in this review.

**Table 3: HIV prevalence and consistent condom use among MSM in Vietnam**

Location	Year	Population	HIV prevalence	Consistent condom use	Reference
National	2010	MSM	No data	72% (average)	Nguyen Q, Schoenbach VJ, et al
	2009	MSM	5%	No data	Fridae MSM Sex Survey
	2009	MSM	2%	No Data	MOH; 2009 Estimates and Projections
Hanoi	2009	MSM/MSW	MSW: 14.3% MSM: 19.9%	<i>With:</i> Consensual partners: 65% Regular female partners: 32%	MOH; 2009 IBBS
	2009	MSM	3.8%	No data	MOH; 2009 Estimates and Projections
	2009	MSW	3%	<i>During anal sex acts:</i> 65%	Le MG & Clatts M. <b>(unpublished results)</b>
	2007	MSM/MSW	MSW: 29.1% MSM: 37.1%	<i>MSW data only:</i> Receptive anal sex: 28.6% Insertive anal sex: 52.6%	Clatts MC, Giang LM et al
	2006	MSM	9.4%	<i>With:</i> Male consensual partners: 29% Male clients: 33% MSW: 24% Female partners: 24% Female clients: 19% FSW***: 41%	MOH; 2006 IBBS
Hai Phong	2009	MSM/MSW	MSW: 14.8% MSM: 16.6%	No data	MOH; 2009 IBBS
Ho Chi Minh City	2011	MSW	6.3%	No data	Colby D & Mimiaga M <b>(unpublished results)</b>
	2010	MSM	16%	<i>During anal sex:</i> Always: 29.7% Almost always: 37.0%	Nguyen <b>(unpublished results)</b>

	2009	MSM/MSW	MSW: 16.4% MSM: 14.4%	<i>With:</i> Consensual partners: 30% Regular female partners: 24%	MOH; 2009 IBBS
	2009	MSM	9.4%	No data	MOH; 2009 Estimates and Projections
	2008	MSM	Total: 8% Transgender: 6.8% Non-transgender: 7% Bisexual: 13.5% Sex worker: 33.3%	<i>With:</i> Casual partners: 50.9% Regular partners: 34.2% Male sex workers: 57.9% Foreign partners: 58.1%	Nguyen TA, Nguyen HT, et al
	2006	MSM	5.3%	<i>With:</i> Male consensual partners: 37% Male clients: 51% MSW: 32% Female partners: 17% Female clients: 40% FSW: 47%	MOH; 2006 IBBS
	2005	MSM	5.8%	40%	Family Health International
Can Tho	2009	MSM/MSW	MSW: 8.9% MSM: 5.0%	No data	MOH; 2009 IBBS
Khanh Hoa	2008	MSM	0%	Urban: 68% Rural: 58%	Colby D, Minh TT, et al

## DISCUSSION

The results of this systematic review strongly suggest that HIV prevalence among MSM in Vietnam has been on the rise over time. In fact, the Ho Chi Minh City AIDS Committee[20] estimates that by 2012, the number of new HIV infections contracted by MSM in Ho Chi Minh city each year is projected to be higher than the annual number of new infections in each of the other two identified high risk groups in the city, IDU and FSW. Behavioural data, such as HIV testing, number of sexual partners and unprotected anal intercourse, also suggest reason for concern.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Knowing one's HIV status and associated counselling have been found to be associated with decreased high-risk sexual practices[21]. Although HIV counselling and testing is increasing among IDU and FSW, it remains inadequately low among MSM, and has not increased since the 2006 round of IBBS which may suggest the need for alternative testing strategies for this at-risk group.[5] Low rates of HIV testing over time may be a contributing cause to the alarming rise in HIV prevalence among MSM in Vietnam. While male-to-male sex is preferred by most of those surveyed in the studies identified above, significant numbers of MSM are also having female sexual partners due to continued family and societal pressure to conform to masculine norms. The low level of consistent condom use with these women, coupled with already relatively high rates of HIV prevalence among MSM and low rates of protective behaviour with other male sex partners reveals yet another contributing factor to elevated HIV prevalence among MSM in Vietnam..[19]

Nguyen et al[16] found that unprotected sex among surveyed MSM correlated with low perception about risk of HIV transmission, HIV prevalence and the number of casual sex partners. The findings of this review identify a need for greater HIV awareness among this group, as well as programs delivering consistent and segmented prevention messages. Coupled with HIV awareness raising and prevention messages, the data analyzed in this review point to the need for greater access to MSM-friendly HIV services, such as HIV testing and counselling, condom/lubrication provision, HIV care and treatment, which would contribute to slowing the pace of HIV infections among this high risk group. For example, given that HIV diagnosis often leads to safer sexual practices, according to the findings of an original study by Nguyen and Kiethly[22] among People Living with HIV (PHIV) in Vietnam, testing and counselling services

1  
2  
3 need to be expanded and segmented based on the needs of each high risk group in order  
4  
5 to increase HIV testing uptake.  
6  
7

8  
9 Findings from this review also suggest the need to identify and appropriately address  
10 the socio-cultural and economic aspects that influence HIV infection among MSM.[23]  
11  
12 Currently, MSM continue to report not being treated equally when they present  
13 themselves to public service providers, such as health clinics, schools, or public  
14 administration offices. Stigma continues to be a significant barrier to accessing basic  
15 and necessary services.[24] Awareness raising campaigns should also be segmented for  
16 greater effectiveness, with the delivery of directed information and messaging to  
17 families, government entities, and the Vietnamese population.  
18  
19

20  
21 A limitation of the study design includes the omission of literature published in  
22 languages other than English; however, efforts were made to contact MSM experts and  
23 practitioners in Vietnam to ensure review's inclusiveness and breadth. Another  
24 limitation of the study design is that it included abstraction of both behavioural and  
25 biological data sets, and therefore the application of PRISMA had to be combined with  
26 the ePPI Quality and Relevance appraisal framework in order to ensure appropriate  
27 scoring methodology for diverse studies. A key strength of this review is its inclusion of  
28 behavioural data sets, as these provide insight on the rapid rise of HIV prevalence  
29 among MSM in Vietnam.  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48

#### 49 **ACKNOWLEDGEMENTS**

50  
51 Accurate data can be challenging to generate and disseminate in Vietnam. However, the  
52 UNAIDS/Vietnam country office and the PEPFAR/Vietnam team have diligently  
53 worked with the Government of Vietnam to improve surveillance, MARP mapping and  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 estimates and projections. I would like to thank Christopher Fontaine at  
4  
5 UNAIDS/Vietnam and Dr Nguyen Cuong Quoc at FHI/Vietnam for their valuable  
6  
7 expertise and timely provision of difficult-to-access data and documentation on MSM in  
8  
9 Vietnam.  
10

### 11 12 13 14 **CONFLICT OF INTEREST DISCLOSURE STATEMENT**

15  
16 None of the authors of the above manuscript has declared any conflict of interest within  
17  
18 the last three years which may arise from being named as an author on this manuscript.  
19

### 20 21 22 23 **SOURCES OF SUPPORT**

24  
25 This study was funded in part by Flinders University post-graduate grants and  
26  
27 independent funding.  
28

### 29 30 31 32 **CONTRIBUTORSHIP**

33  
34 MCG designed data extraction tools, extracted data, analysed and scored data, and  
35  
36 drafted and revised the paper. She is guarantor. SBM scored and validated the extracted  
37  
38 data, contributed to article revisions, and provided final approval of the version to be  
39  
40 published. PW provided study design, contributed to article revisions, and provided  
41  
42 final approval of the version to be published.  
43  
44

### 45 46 47 48 **DATA SHARING**

49  
50 Abstraction dataset available from the corresponding author at  
51  
52 [<macarena.c.garcia@gmail.com>](mailto:macarena.c.garcia@gmail.com).  
53

### 54 55 56 57 **REFERENCES**

- 1 Vietnam Administration for AIDS Control and Prevention. *Vietnam HIV/AIDS Estimates and Projections, 2007-2012*. Hanoi, Vietnam: Vietnam Ministry of Health 2009.
- 2 United Nations Joint Programme for HIV/AIDS. *Vietnam – Facts and Figures*. UNAIDS/Vietnam 2008. Retrieved 7 October 2009 from [unaids.org.vn](http://unaids.org.vn).
- 3 Barald S, Sifakis F, Cleghorn F, et al. Elevated risk for HIV Infection among men who have sex with men in low- and middle-income countries 2000–2006: A Systematic Review. *PLoS Med* 2007;**4**:e339.
- 4 van Griensven F, van Wijngaardenc JW, Barald S, et al. The global epidemic of HIV infection among men who have sex with men. *Curr Opin HIV AIDS* 2009;**4**: 300–307.
- 5 Nguyen AT, Tran VH. HIV/STI Integrated Biological and Behavioral Surveillance in Vietnam (IBBS), 2009 (Round 2). *4th National Scientific Conference on HIV/AIDS; 1-2 December 2009, Hanoi, Vietnam*. Hanoi: National Institute of Hygiene and Epidemiology (NIHE) and Vietnam Administration for HIV/AIDS Control (VAAC), Ministry of Health; 2010.
- 6 Franklin, B. *The risk of AIDS in Vietnam: An Audience Analysis of Urban Men and Sex Workers, with Guidelines for Prevention*. Hanoi: CARE International in Vietnam 1993.



- 1  
2  
3 7 Colby D, Cao NH, Doussantousse S. Men who have sex with men and HIV in  
4 Vietnam: a review. (Special issue: HIV prevention for Asian and Pacific Islander  
5 men who have sex with men: Identifying needs for the Asia Pacific Region.). *AIDS*  
6 *Educ Prev* 2004;**16**:45–54.  
7  
8  
9  
10  
11  
12  
13  
14 8 ePPI Centre. *Quality and relevance appraisal framework for systematic reviews.*  
15 *London 2011*. <http://eppi.ioe.ac.uk/> (accessed 4 December 2011).  
16  
17  
18  
19  
20  
21 9 Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA Statement for reporting  
22 systematic reviews and meta-analyses of studies that evaluate health care  
23 interventions: explanation and elaboration. *PLoS Med* 2009;**6**:1–28.  
24  
25  
26  
27 10 Socialist Republic of Vietnam. *UNGASS Country Progress Report*. Hanoi,  
28 Vietnam: United Nations 2010.  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38 11 Fontaine C. Policy environment and MSM in Vietnam. Personal communication.  
39 (Garcia MC, Hanoi: 2011).  
40  
41  
42  
43  
44  
45 12 Vietnam Ministry of Health. *Results from the HIV/STI Integrated Biological and*  
46 *Behavioral Surveillance (IBBS) in Vietnam, 2005-2006*. Hanoi: Ministry of Health  
47 2006.  
48  
49  
50  
51  
52  
53  
54 13 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
55 City. (Unpublished).  
56  
57  
58  
59  
60

- 1  
2  
3  
4  
5 14 Le MG, Clatts M. *Men selling sex to other men in Hanoi: findings from an ethno-*  
6 *epidemiological study*. Hanoi: UNAIDS; 2009. [www.unaids.org.vn](http://www.unaids.org.vn) (accessed 13  
7  
8 December 2011).  
9  
10  
11  
12  
13  
14 15 Colby D, Minh TT, Toan TT. Down on the farm: homosexual behaviour, HIV risk  
15 and HIV prevalence in rural communities in Khanh Hoa province, Vietnam. *Sex*  
16 *Transm Infect* 2008;**84**:439–443.  
17  
18  
19  
20  
21  
22  
23 24 Nguyen Q, Schoenbach VJ, Le B, et al. HIV risk behaviors of Vietnamese men  
25 who have sex with men: results of a national online survey. In: *The 7th Vietnamese*  
26 *Education Foundation Fellows and Scholars Conference; 3-5 January 2010*; New  
27 York: Rensselaer Polytechnic Institute 2010.  
28  
29  
30  
31  
32  
33  
34 35 Colby D, Mimiaga M. Results of research on male sex workers in Ho Chih Minh  
36 City. (Unpublished).  
37  
38  
39  
40  
41 42 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
43 City. (Unpublished).  
44  
45  
46  
47 48 Lowe D, Thien P. *Rapid situation and response assessment of HIV and AIDS*  
49 *programs for men who have sex with men in Vietnam. DRAFT REPORT*. Hanoi,  
50 Vietnam: Vietnam Ministry of Health - Vietnam Administration for AIDS Control  
51 and Prevention (VAAC) 2010.  
52  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60
- 20 Ho Chi Minh City Provincial AIDS Committee. The HIV epidemic in Ho Chi Minh City: Where is it going? Ho Chi Minh City, Vietnam: USAID 2006.
- 21 Holtgrave D, McGuire J. Impact of Counselling in Voluntary Counselling and Testing Programs for Persons at Risk for or Living with HIV Infection. *Clinical Infectious Diseases*. 2007; **44**(3): 360-363.
- 22 Nguyen NT, Keithly SC. A qualitative study on the sexual behaviour of people living with HIV in Vietnam. *AIDS Care* Published Online First: 24 January 2012. doi:10.1080/09540121.2011.644230
- 23 Clatts MC, Giang LM, Goldsamt LA, et al. Male sex work and HIV risk among young heroin users in Hanoi, Vietnam. *Sex Health* 2007;**4**:261–267.
- 24 Tran TN, Le TMP, Nguyen TV. *RESEARCH REPORT: MSM in Vietnam - social stigma and consequences*. Hanoi, Vietnam: STDs/HIV/AIDS Prevention Center (SHAPC) 2009.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Figure Legend**

**Figure 1: Literature search flow diagram[9]**

For peer review only

1  
2  
3  
4  
5  
6 **Elevated HIV prevalence and risk behaviours among men who have sex with men**  
7 **(MSM) in Vietnam: a systematic review**  
8  
9

10 Macarena C García, MA<sup>1</sup>  
11 Samantha B Meyer, PhD<sup>1</sup>  
12 Paul Ward, PhD<sup>1</sup>  
13

14 <sup>1</sup>Discipline of Public Health, Flinders University, Adelaide, Australia  
15  
16

17 **Corresponding author contact details.**

18 Macarena C García  
19 US Embassy/Maseru  
20 2340 Maseru Place  
21 Dulles, VA 20189  
22 Tel +1.909.610.6005  
23 Fax +1 909 629 9011  
24 Email [macarena.c.garcia@gmail.com](mailto:macarena.c.garcia@gmail.com)  
25  
26

27 **Keywords.**

28 HIV; AIDS; gay men; homosexuality; sexual behaviour.  
29  
30

31 **Word count.**

32 2,993,730 (including tables; excluding abstract, key messages box and  
33 acknowledgements)  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam: a systematic review

### ABSTRACT

*Objectives:* To review and analyze original studies on HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam.

*Design:* Systematic literature review. Comprehensive identification of material was conducted by systematic electronic searches of selected databases. Inclusion criteria included studies conducted from 2002 onwards, following a systematic review concluding in 2001 conducted by Colby, Nghia Huu, and Doussantousse. Data analysis was undertaken through the application of both the Cochrane Collaboration and ePPI Centre approaches to the synthesis of qualitative and quantitative studies.

*Setting:* Vietnam.

*Results:* Sixteen studies, undertaken during 2005-2011, were identified that met the inclusion criteria. ~~Study results were frequently heterogeneous.~~ The analysis showed that HIV prevalence among MSM in Vietnam has increased significantly (from 9.4 in 2006 to 20% in 2010 in Hanoi, for instance) -and that protective behaviours, such as condom use and HIV testing and counselling, continue at inadequately low levels.

*Conclusions:* Increasing HIV prevalence and the lack of effective protective behaviours such as consistent condom use during anal sex among MSM in Vietnam indicate a potential for a more severe HIV epidemic in the future unless targeted and segmented comprehensive HIV prevention strategies for MSM in Vietnam are designed and programs implemented.

### KEY MESSAGES (BOX)

Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam draws concern from the region and the world. Multiple epidemiological and behavioural studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam, the first study dating back to 1993. Although a systematic review of research on Vietnamese MSM and HIV epidemiology was published in 2004, the results presented only include original studies conducted up to 2001. Since that time, over a dozen studies on MSM in Vietnam have been conducted and are the topic of this review.

This work starts off where the previous systematic review left off. It finds that the majority of study ~~findings~~ results published and/or presented at national/international conferences reveal rapidly increasing rates of HIV infection and an alarming shift in HIV epidemiology among this high-risk population in Vietnam within the last decade.

This work highlights the need for large scale targeted and MSM-friendly prevention interventions for MSM in Vietnam to address the risks posed by:

- low levels of consistent condom use
- low lubrication use
- high levels of unprotected anal intercourse
- multiple and concurrent sexual partnerships

## BACKGROUND

The HIV/AIDS epidemic in Vietnam is still in a concentrated phase, with the highest prevalence rates found among specific populations at higher risk; these include injecting drug users (IDU), female sex workers (FSW) and MSM. As documented by the Ministry of Health Estimates and Projections Project Report.[1] MSM populations are

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Justified, Line spacing: Double

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

larger than those of the other groups, and are primarily concentrated in urban areas such as Ho Chi Minh City (64,247), the Red River Delta (60,698), the Mekong River Delta (73,727) and Hanoi (35,436). In these urban centers, IDU and FSW population estimates are lower.

According to UNAIDS,[2] prevalence in the general population is estimated at 0.53% and an estimated 243,000 Vietnamese were living with HIV and/or AIDS in 2009. Of all reported HIV cases, 78.9% are in the age group 20-39, with males accounting for 85.2% of total reported HIV cases. The average age of people living with HIV is decreasing and heterosexual transmission is becoming more significant.[2]

Unlike Thailand to the west, the epidemic in Vietnam is not as severe. UNAIDS[2] reports that the epidemics in Ho Chi Minh City (HCMC) and the north-east coast initiated earlier, while epidemics in other parts of the country are much more recent.

According to UNAIDS,[2] "this variability has resulted in a geographic concentration of HIV cases in large cities and provinces where the local HIV epidemic in groups of IDUs, FSWs and MSM is substantial."

Male-to-male sexual contact has been an important route of HIV-1 infection since HIV/AIDS was first identified nearly 30 years ago. In the past few years, there has been increased concern about new, newly identified, and resurging epidemics of HIV infection in men who have sex with men (MSM) on a global level.[34,42] Against the backdrop of low and declining adult HIV prevalence in most countries, MSM continue to be disproportionately affected by HIV infection.[34] In Asia, MSM have 18.7 times the odds of being HIV infected compared with someone in the general adult

- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt



1  
2  
3  
4  
5  
6 population.[34] In recent years, scattered epidemiological research has identified high  
7  
8 HIV prevalence among MSM in several Asian countries, with varying degrees of study  
9  
10 findings and conclusions across countries. Recent data made available through the  
11  
12 presentation of preliminary Integrated Biological and Behavioral Survey (IBBS) results  
13  
14 suggest an exponential increase in HIV prevalence among MSM in both Hanoi and Ho  
15  
16 Chi Minh City, from 9.4% and 5.3% in 2006, respectively, to 20% and 14% in 2009,  
17  
18 respectively.[35]  
19

20  
21  
22 Rapidly rising prevalence rates among MSM in Vietnam draws concern from the region  
23  
24 and the world. Multiple epidemiological and behavioural studies have addressed HIV  
25  
26 prevalence and risk behaviours among MSM in Vietnam, the first study dating back to  
27  
28 1993.[64] Although a comprehensive and systematic review of research on Vietnamese  
29  
30 MSM and risk factors for HIV was undertaken by Colby, Nghia Huu, and  
31  
32 Doussantousse,[75] the results capture original studies conducted up to 2001. Since that  
33  
34 time, over a dozen biological and behavioural studies on MSM in Vietnam have been  
35  
36 conducted and are the topic of this review. This systematic review sets forth a summary  
37  
38 analysis of identified additional studies, highlighting the current state of HIV prevalence  
39  
40 and risk behaviour among this at-risk population.  
41  
42

## 43 **METHOD**

### 44 **Search Strategy**

45  
46 Original studies investigating HIV prevalence and risk behaviours among MSM in  
47  
48 Vietnam were identified by searching both electronic databases (PubMed, BioMed,  
49  
50 MEDLINE, and Google Scholar) and conference proceedings. Guided by the search  
51  
52 protocol applied in a similar review of global scope in Baral et al,[34] the following  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4  
5  
6 medical subject heading (MESH) terms were used as title keywords in database  
7  
8 searches conducted: HIV AND (MSM OR homosexual AND Viet\*) OR (men who have  
9  
10 sex with men AND Viet\*) OR (Human Immune Deficiency Syndrome), and limited to  
11  
12 reports in the English language. Additional studies were also identified through cross-  
13  
14 referencing, examination of the bibliographies of retrieved articles and making contact  
15  
16 with primary researchers and authors in Vietnam.

17  
18  
19  
20 Inclusion criteria included the following: studies on HIV prevalence and risk behaviour  
21  
22 data among MSM populations in Vietnam (including homosexual, bisexual, male sex  
23  
24 workers, and transgenders); publication in a peer-reviewed journal; and, an abstract at a  
25  
26 conference. Gray literature was identified and included on a case-by-case basis. For  
27  
28 example, if the studies were not published in a peer-reviewed journal, though  
29  
30 commissioned by the Government of Vietnam and/or an International Non-  
31  
32 Governmental Organization (NGO), the studies were included.

33  
34  
35  
36 Exclusion criteria were adapted from similar studies with global breadth, which resulted  
37  
38 in a standardized method of excluding studies that did not meet rigorous pre-determined  
39  
40 minimum standards.<sup>[34]</sup> Articles/abstracts presenting reviews of several studies were  
41  
42 omitted, and only original study findings were included in this systematic review. The  
43  
44 ePPI Centre quality and relevance appraisal framework,<sup>[86]</sup> discussed in the proceeding  
45  
46 section, was used to summarize the weight of evidence each study could contribute to  
47  
48 the review's findings, and was an important component of the exclusion criteria.

#### 51 **Data extraction and analysis**

52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4  
5  
6 The initial search strategy yielded a total of 326 papers. This number was subsequently  
7  
8 reduced through a number of stages, using the inclusion and exclusion criteria outlined  
9  
10 above. However, only the final sixteen studies were assessed against the ePPI Centre  
11  
12 quality and relevance appraisal framework.<sup>[86]</sup> The titles of the papers were reviewed  
13  
14 for geographic and substantive relevance, which reduced the number to 12. Copies of  
15  
16 these papers were obtained and respective bibliographies were reviewed in order to  
17  
18 identify additional papers of relevance. ~~Also, p~~Primary researchers and authors in  
19  
20 Vietnam with published expertise in MSM issues were contacted which resulted in the  
21  
22 collection of 33 additional documents not available in the database searches conducted  
23  
24 (ie, conference papers, presentations, preliminary study findings). The last step was to  
25  
26 apply the inclusion and exclusion criteria to the additional documents retrieved. The  
27  
28 final number of papers for review was 16.  
29  
30

31  
32 Data extraction was performed using a template designed for this purpose. For all  
33  
34 studies in this review, the following data were extracted from original publications:

35  
36 1. Descriptive and Substantive Data: a) first author and year of publication; b)  
37  
38 study site and period; c) sampling methods; d) sampling size and age of  
39  
40 participants; e) methods and results of HIV infection detection; f) reported risk  
41  
42 behaviours; g) outcome measures; and

43  
44 2. ePPI Quality and Relevance Appraisal: a) trustworthiness of results judged by  
45  
46 the quality of the study within the accepted norms for undertaking the particular  
47  
48 type of research design used in the study; b) appropriateness of the use of the  
49  
50 study design for addressing the systematic review's research question; c)  
51  
52 appropriateness of focus for the research for answering the review question; and,  
53  
54 d) judgment of overall weight of evidence based on the assessments made for  
55  
56 each of the criteria above.  
57  
58  
59  
60

1  
2  
3  
4  
5  
6 Data extraction and validation was carried out by one of authors (MCG) and abstraction  
7  
8 methods and data extraction were independently scored and validated by a second  
9  
10 academic (SBM). Conflicts between abstractors were settled by subsequent discussion  
11  
12 and when appropriate, by contacting the authors of the study in question for further  
13  
14 verification. Abstractor and reviewers ~~was-were~~ not blinded to the purpose of this study,  
15  
16 nor blinded to author affiliations. Findings from extracted studies were analyzed with a  
17  
18 focus on exploring HIV prevalence and risk behaviour among MSM in Vietnam.  
19  
20

## 21 22 RESULTS

23  
24 The systematic review of original studies yielded the identification of two main themes.  
25  
26 The first theme is formal and includes government-owned data from biological and  
27  
28 behavioural surveillance studies carried out in Vietnam in 2006 and 2009. These data  
29  
30 are considered official and are often cited in peer reviewed publications, conference  
31  
32 papers/presentations, and reports to the United Nations General Assembly Special  
33  
34 Session on HIV/AIDS (UNGASS). The second theme is less formal and includes  
35  
36 studies carried out by independent researchers, universities, and non-governmental  
37  
38 organisations. These studies address gaps in existing knowledge about HIV risk and  
39  
40 behaviour, and include more comprehensive data sets than those found in official  
41  
42 surveillance reports.  
43  
44

### 45 46 Biological and behavioural surveillance

47  
48 MSM are not part of the national surveillance system which tracks HIV incidence and  
49  
50 prevalence among Female Sex Workers (FSW) and IDU, among others.[810] However,  
51  
52 MSM are now a target group for future surveillance efforts in Vietnam, having been  
53  
54 included in the *Estimates and Projections* Project of 2009.[91] According to  
55  
56  
57  
58  
59  
60

Fontaine<sup>[4011]</sup> at the United Nations Joint Programme for HIV/AIDS (UNAIDS) office in Vietnam, MSM have been included as a 'pilot' group in the newly established HIV sentinel surveillance plus behavioural surveillance initiative in the 2010 and 2011 rounds (data not yet available). To date, the most prominent biological and behavioural studies to include MSM as an at-risk group for HIV infection have been the two IBBS rounds, 2005-2006<sup>[4112]</sup> and 2009.<sup>[35]</sup>

The 2009 IBBS sampled 1,596 MSM in Hanoi, Hai Phong, Ho Chi Minh City, and Can Tho. Data were not disaggregated between male identified MSM, and transgenders, but was disaggregated by men reporting transactional sex and those not. Along with HIV prevalence and risk behaviours, sexually transmitted infections (STI) were also measured (see table 1, below).

**Table 1: STI<sup>1</sup> prevalence among MSM (2009 IBBS)**

Province	MSM who reported transactional sex	MSM who did <u>not</u> report transactional sex
Hanoi	18.7%	13.4%
Hai Phong	No data available	7.5%
Ho Chi Minh City	21.5%	21.1%
Can Tho	17.7%	17.3%

Source: Nguyen and Tran 2010<sup>[35]</sup>

Although HIV prevalence was highest among MSM in Hanoi not reporting transactional sex (19.9%), prevalence in Hai Phong and Ho Chi Minh City is equally concerning, at 16.6% and 14.4% among MSM not reporting transactional sex.<sup>[35]</sup> The

<sup>1</sup> Includes Syphilis, rectal and genital Chlamydia and Gonorrhoea

1  
2  
3  
4  
5  
6 2009 IBBS data show that MSM reporting transactional sex have a lower HIV  
7 prevalence rate in all provinces where IBBS conducted surveys, except for Can Tho  
8 where MSM reporting transactional sex had nearly a two-fold HIV prevalence rate  
9 compared to MSM who did not report transactional sex (8.9% and 5% respectively).  
10  
11 The biological and behavioural survey from Ho Chi Minh City reveals a 16% HIV  
12 prevalence rate,<sup>[1213]</sup> slightly lower than the results from the 2009 IBBS,<sup>[35]</sup> which  
13 showed a prevalence rate of 16.4%. ~~Alarmingl~~~~y~~~~Approximately~~ 47.3% of Ho Chi Minh  
14 City MSM in the Ho Chi Minh City study reported having sex with another male for  
15 transactional purposes in the last twelve months, with 16% reporting to have injected  
16 drugs in their lifetime and 41.7% of those having injected in the last year.<sup>[35]</sup> However,  
17 the 2009 IBBS shows higher rates of injecting drug use among HIV infected MSM in  
18 Hanoi, Ho Chi Minh City, and Can Tho.  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30

31  
32 According to preliminary data from the 2009 IBBS,<sup>[35]</sup> HIV prevalence among MSM  
33 in Hanoi and Ho Chi Minh City ~~have~~~~has~~ significantly increased since the first IBBS  
34 round in 2006. Among MSM not reporting transactional sex in Hanoi, HIV prevalence  
35 nearly doubled (from 11% to 20%), and in Ho Chi Minh City HIV prevalence among  
36 MSM not reporting transactional sex nearly tripled going from 6% in 2006 to 16% in  
37 2009.<sup>[53]</sup>  
38  
39  
40  
41  
42  
43  
44

45 Among both MSM reporting transactional sex and those who did not, a significant  
46 percentage reported sex with regular female partners, as well as FSW. In Can Tho, Ho  
47 Chi Minh City and Hanoi, more than 45% of MSM who reported transactional sex also  
48 reported having a regular female sexual partner (56%, 47%, and 51% respectively).  
49 25% of MSM in Can Tho reported having sex with an FSW, 18% in HCMC and 20% in  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Hanoi reported the same.<sup>[53]</sup> Conversely, sex with male sex workers was much lower than sex with female sex workers among MSM reporting transactional sex.<sup>[53]</sup> MSM who did not report transactional sex reported higher rates of sex with consensual partner/s and sex with a regular female partner.<sup>[53]</sup> ~~Among this particular group of MSM (those not reporting transactional sex), a lower percentage reported sex with commercial clients (both female and male); however, these MSM consistently reported higher rates of sex with FSW across all four IBBS provinces, than sex with male sex workers (MSW).<sup>[3]</sup>~~

~~Unfortunately,~~ Comparisons between the data from 2006 and 2009 rounds of IBBS reveal that consistent condom use with consensual partners among MSM reporting no transactional sex decreased in Ho Chi Minh City, going from 38% in 2006 to 30% in 2009. Similarly, among this group of MSM, consistent condom use with regular female partners decreased slightly, from 27% to 24%. However, dramatic increases are noted in Hanoi where consistent condom use with consensual partners went from 30% in 2006 to 65% in 2009. There was also an increase in reported consistent condom use with regular female partners among MSM in Hanoi, from 23% in 2006 to 32% in 2009.<sup>[53]</sup> Although the increase in consistent condom use is important and worth noting, reported consistent condom use among MSM remains ~~relatively low compared and comparable~~ with low condom-use among other at-risk groups in Vietnam, such as commercial sex workers (see table 2, below).

**Table 2: Consistent condom use: comparison between FSW and MSM (2009 IBBS)**

Province	Venue-based FSW	Street-based FSW	MSM w/consensual partner	MSM w/regular female partner
Hanoi	38%	33%	65%	32%

Hai Phong	80%	81%	No data	No data
Ho Chi Minh City	32%	23%	30%	24%
Can Tho	80%	86%	No data	No data

Source: Nguyen and Tran 2010[53]

### Epidemiological and behavioural studies

In addition to IBBS rounds, many independent researchers, organisations and universities have carried out epidemiological and behavioural studies on MSM in Vietnam. Le and Clatts [4314] conducted a behavioural study in 2005 among 110 male sex workers in Hanoi. Also in 2005, Colby, Minh and Toan[4415] carried out a study on HIV risk and prevalence among MSM living in rural Vietnam, the first study of its kind to study this population in a rural setting. Nguyen, Schoenbach, Huynh and Le[4516] presented behavioural data the 7th Vietnamese Education Foundation Fellows and Scholars Conference, collected from over 6,000 MSM through an online forum. Colby and Mimiaga[4617] have also made available preliminary findings from their study of MSW in Ho Chi Minh City, undertaken in 2009 and 2010. Finally, Nguyen[4718] has released preliminary findings from a biological and behavioural survey conducted in Ho Chi Minh City in 2010, among 300 MSM, which was independent from the national 2009 IBBS. The latter two studies represent unpublished data which have not been peer reviewed and therefore are not included in this formal systematic review. However, the preliminary data from these studies are critical to understanding the HIV risk behaviours among MSM in Vietnam, especially among male sex workers, a risk group that has been historically under-studied.



1  
2  
3  
4  
5  
6 In the Colby et al<sup>[16,17]</sup> study on MSW, 41% reported having sex with female/s, 8%  
7 reported having sex with FSW and 16% having sex with MSW in 2009. Those figures  
8  
9  
10 decreased in 2010 to 35%, 5% and 9%, respectively<sup>[16], [17]</sup> In comparison, Nguyen et  
11 al's online study<sup>[15,16]</sup> yielded very different results, with only 7.6% of 3,231 MSM  
12 surveyed reporting both male and female sexual partners. In the Colby et al  
13 study<sup>[16], [17]</sup> 36% of MSM reported having unprotected anal intercourse in the past  
14 month in 2009, with a decrease to 22% in 2010 among the same MSM study cohort.  
15  
16  
17  
18  
19  
20 Nearly a quarter of MSM in Colby et al's study<sup>[17,6]</sup> reported unprotected anal sex with  
21 male client/s in 2009 and 2010 (22% and 21% respectively).  
22  
23

24  
25  
26 The Hanoi MSW study by Le and Clatts<sup>[143]</sup> found that most men who sell sex in  
27 Hanoi came from other provinces (79%), with most selling sex for economic survival  
28 and the majority reporting their exclusive attraction to women (74%). The Le and Clatts  
29 study<sup>[143]</sup> also revealed that 58% of MSW had used at least one type of illicit drug in  
30 the past (58%). For those that reported illicit drug use, they most commonly used drugs  
31 in the past 90 days, and the most frequent drug used was the injection of heroin (50%).  
32  
33  
34  
35  
36  
37 In this particular study, higher levels of condom use were reported than in the Colby et  
38 al study,<sup>[17,6]</sup> with 65% of MSW reporting condom use during anal sex<sup>[12], [13]</sup> Of the  
39 MSW reporting Heroin injection, 42% reported having insertive anal sex with their  
40 most recent sex client, with no condom use in 47% of cases.<sup>[143]</sup> One third of the 110  
41 MSW interviewed in Hanoi reported having paid for sex in the last 90 days, with 81%  
42  
43  
44  
45  
46  
47 buying sex from FSW and only 19% buying sex from other MSW.<sup>[143]</sup>  
48  
49

50  
51  
52 Colby et al studied rural MSM populations in Khanh Hoa province, particularly  
53 focusing on HIV risk and prevalence.<sup>[154]</sup> Of the 216 MSM living in rural areas, 46%  
54  
55

described their sexual orientation as bisexual, 9% as heterosexual and 45% as homosexual.[154] This was the first survey to confirm that MSM not only live in urban settings, but can also be found in rural areas, where the majority of Vietnam's population live, and are relatively easy to identify.[154] As with urban MSM, this study revealed that vaginal sex was relatively common, with 36% of rural MSM engaging in vaginal sex with a female partner in the previous six months. However, anal sex with casual male partners was more common, with 47% of rural MSM having engaged in anal intercourse with a casual male partner in the previous six months. All MSM in this study tested for HIV were found to be negative.[154] However, according to Lowe and Thien,[198] HIV testing among a group of 800 MSM in Khanh Hoa province revealed a prevalence rate of 1.9%. Table 3, below, provides a summary of HIV prevalence and consistent condom use across all studies included in this review.

**Table 3: HIV prevalence and consistent condom use among MSM in Vietnam**

Location	Year	Population	HIV prevalence	Consistent condom use	Reference
National	2010	MSM	No data	72% (average)	Nguyen Q, Schoenbach VJ, et al
	2009	MSM	5%	No data	Fridae MSM Sex Survey
	2009	MSM	2%	No Data	MOH; 2009 Estimates and Projections
Hanoi	2009	MSM/MSW	MSW: 14.3% MSM: 19.9%	<i>With:</i> Consensual partners: 65% Regular female partners: 32%	MOH; 2009 IBBS
	2009	MSM	3.8%	No data	MOH; 2009 Estimates and Projections
	2009	MSW	3%	<i>During anal sex acts:</i> 65%	Le MG & Clatts M. ( <i>unpublished results</i> )
	2007	MSM/MSW	MSW: 29.1% MSM: 37.1%	<i>MSW data only:</i> Receptive anal sex: 28.6%	Clatts MC, Giang LM et al

				Insertive anal sex: 52.6%	
	2006	MSM	9.4%	<i>With:</i> Male consensual partners: 29% Male clients: 33% MSW: 24% Female partners: 24% Female clients: 19% FSW***: 41%	MOH; 2006 IBBS
Hai Phong	2009	MSM/MSW	MSW: 14.8% MSM: 16.6%	No data	MOH; 2009 IBBS
Ho Chi Minh City	2011	MSW	6.3%	No data	Colby D & Mimiaga M ( <i>unpublished results</i> )
	2010	MSM	16%	<i>During anal sex:</i> Always: 29.7% Almost always: 37.0%	Nguyen ( <i>unpublished results</i> )
	2009	MSM/MSW	MSW: 16.4% MSM: 14.4%	<i>With:</i> Consensual partners: 30% Regular female partners: 24%	MOH; 2009 IBBS
	2009	MSM	9.4%	No data	MOH; 2009 Estimates and Projections
	2008	MSM	Total: 8% Transgender: 6.8% Non-transgender: 7% Bisexual: 13.5% Sex worker: 33.3%	<i>With:</i> Casual partners: 50.9% Regular partners: 34.2% Male sex workers: 57.9% Foreign partners: 58.1%	Nguyen TA, Nguyen HT, et al
	2006	MSM	5.3%	<i>With:</i> Male consensual partners: 37% Male clients: 51% MSW: 32% Female partners: 17% Female clients: 40% FSW: 47%	MOH; 2006 IBBS
	2005	MSM	5.8%	40%	Family Health International
Can Tho	2009	MSM/MSW	MSW: 8.9% MSM: 5.0%	No data	MOH; 2009 IBBS
Khanh Hoa	2008	MSM	0%	Urban: 68% Rural: 58%	Colby D, Minh TT, et al

## DISCUSSION

~~In Vietnam, The results of this systematic review strongly suggest that HIV prevalence among MSM in Vietnam has been on the rise over time. In fact, the Ho Chi Minh City AIDS Committee[2019] estimates that by 2012, the number of new HIV infections contracted by MSM in Ho Chi Minh city each year is projected to be higher than the annual number of new infections in each of the other two identified high risk groups in the city, IDU and FSW. Behavioral/Behavioural data, such as HIV testing, number of sexual partners and unprotected anal intercourse, also suggest reason for concern.~~

~~Although HIV counselling and testing is increasing among IDU and FSW, it remains inadequately low among MSM, and has not increased since the 2006 round of IBBS which may suggest the need for alternative testing strategies for this at risk group.[3] Knowing one's HIV status and associated counselling have been found to be associated with decreased high-risk sexual practices[21]. Although HIV counselling and testing is increasing among IDU and FSW, it remains inadequately low among MSM, and has not increased since the 2006 round of IBBS which may suggest the need for alternative testing strategies for this at-risk group.[53] Low rates of HIV testing over time may be a contributing cause to the alarming rise in HIV prevalence among MSM in Vietnam.-~~ While male-to-male sex is preferred by most of those surveyed in the studies identified above, significant numbers of MSM are also having female sexual partners due to continued family and societal pressure to conform to masculine norms. The low level of consistent condom use with these women, coupled with already relatively high rates of HIV prevalence among MSM and low rates of protective behaviour with other male sex partners reveals yet another contributing factor to

1  
2  
3  
4  
5  
6 elevated HIV prevalence among MSM in Vietnam, a potential for HIV epidemics among  
7 MSM in Vietnam to reach a broader population.[1819]  
8  
9

10  
11  
12 | Nguyen et al[165] found that unprotected sex among surveyed MSM correlated with  
13 low perception about risk of HIV transmission, HIV prevalence and the number of  
14 casual sex partners. The findings of this review identify a need for greater HIV  
15 awareness among this group, as well as programs delivering consistent and segmented  
16 prevention messages. Coupled with HIV awareness raising and prevention messages,  
17 the data analyzed in this review point to the need for greater access to MSM-friendly  
18 HIV services, such as HIV testing and counselling, condom/lubrication provision, HIV  
19 care and treatment, which would contribute to slowing the pace of HIV infections  
20 among this high risk group. For example, given that HIV diagnosis often leads to safer  
21 sexual practices, according to the findings of an original study by Nguyen and  
22 Kiethly[2022] among People Living with HIV (PHIV) in Vietnam, testing and  
23 counselling services need to be expanded and segmented based on the needs of each  
24 high risk group in order to increase HIV testing uptake.  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

40 | Findings from this review also suggest the need to identify and appropriately address  
41 the socio-cultural and economic aspects that influence HIV infection among  
42 MSM.[2123] Currently, MSM continue to report not being treated equally when they  
43 present themselves to public service providers, such as health clinics, schools, or public  
44 administration offices. Stigma continues to be a significant barrier to accessing basic  
45 and necessary services.[2224] Awareness raising campaigns should also be segmented  
46 for greater effectiveness, with the delivery of directed information and messaging to  
47 families, government entities, and the Vietnamese population.  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4  
5  
6 A limitation of the study design includes the omission of literature published in  
7 languages other than English; however, efforts were made to contact MSM experts and  
8 practitioners in Vietnam to ensure review's inclusiveness and breadth. Another  
9  
10 limitation of the study design is that it included abstraction of both behavioural and  
11 biological data sets, and therefore the application of PRISMA had to be combined with  
12 the ePPI Quality and Relevance appraisal framework in order to ensure appropriate  
13 scoring methodology for diverse studies. A key strength of this review is its inclusion of  
14 behavioural data sets, as these provide insight on the rapid rise of HIV prevalence  
15 among MSM in Vietnam.  
16  
17  
18  
19  
20  
21  
22  
23

#### 24 25 26 **ACKNOWLEDGEMENTS**

27  
28 Accurate data can be challenging to generate and disseminate in Vietnam. However, the  
29 UNAIDS/Vietnam country office and the PEPFAR/Vietnam team have diligently  
30 worked with the Government of Vietnam to improve surveillance, MARP mapping and  
31 estimates and projections. I would like to thank Christopher Fontaine at  
32 UNAIDS/Vietnam and Dr Nguyen Cuong Quoc at FHI/Vietnam for their valuable  
33 expertise and timely provision of difficult-to-access data and documentation on MSM in  
34 Vietnam.  
35  
36  
37  
38  
39  
40  
41  
42

#### 43 **CONFLICT OF INTEREST DISCLOSURE STATEMENT**

44  
45 None of the authors of the above manuscript has declared any conflict of interest within  
46  
47 the last three years which may arise from being named as an author on this manuscript.  
48  
49  
50

#### 51 **SOURCES OF SUPPORT**

52  
53  
54  
55  
56  
57  
58  
59  
60

This study was funded in part by Flinders University post-graduate grants and independent funding.

## CONTRIBUTORSHIP

MCG designed data extraction tools, extracted data, analysed and scored data, and drafted and revised the paper. She is guarantor. SBM scored and validated the extracted data, contributed to article revisions, and provided final approval of the version to be published. PW provided study design, contributed to article revisions, and provided final approval of the version to be published.

## DATA SHARING

Abstraction dataset available from the corresponding author at  
~~<macarena.c.garcia@gmail.com>. There is no additional data available.~~

**Formatted:** Font: (Default) Times New Roman, 12 pt

**Formatted:** Font: (Default) Times New Roman, 12 pt, No underline

**Formatted:** Font: (Default) Times New Roman, 12 pt, No underline

## REFERENCES

1 Vietnam Administration for AIDS Control and Prevention. *Vietnam HIV/AIDS Estimates and Projections, 2007-2012*. Hanoi, Vietnam: Vietnam Ministry of Health 2009.

2 United Nations Joint Programme for HIV/AIDS. *Vietnam – Facts and Figures*. UNAIDS/Vietnam 2008. Retrieved 7 October 2009 from [unaids.org.vn](http://unaids.org.vn).

**Formatted:** Font: Italic

3 Barald S, Sifakis F, Cleghorn F, et al. Elevated risk for HIV Infection among men who have sex with men in low- and middle-income countries 2000–2006: A Systematic Review. *PLoS Med* 2007;4:e339.

**Formatted:** No underline, Font color: Auto, Spanish (Argentina)

**Formatted:** Spanish (Argentina)

1  
2  
3  
4  
5  
6  
7  
8 42 van Griensven F, van Wijngaardenc JW, Barald S, et al. The global epidemic of  
9 HIV infection among men who have sex with men. *Curr Opin HIV AIDS* 2009;4:  
10 300–307.  
11

12  
13  
14  
15  
16 53 Nguyen AT, Tran VH. HIV/STI Integrated Biological and Behavioral Surveillance  
17 in Vietnam (IBBS), 2009 (Round 2). *4th National Scientific Conference on*  
18 *HIV/AIDS; 1-2 December 2009, Hanoi, Vietnam*. Hanoi: National Institute of  
19 Hygiene and Epidemiology (NIHE) and Vietnam Administration for HIV/AIDS  
20 Control (VAAC), Ministry of Health; 2010.  
21  
22  
23  
24  
25

26  
27  
28 46 Franklin, B. *The risk of AIDS in Vietnam: An Audience Analysis of Urban Men and*  
29 *Sex Workers, with Guidelines for Prevention*. Hanoi: CARE International in  
30 Vietnam 1993.  
31  
32  
33

34  
35  
36 57 Colby D, Cao NH, Doussantousse S. Men who have sex with men and HIV in  
37 Vietnam: a review. (Special issue: HIV prevention for Asian and Pacific Islander  
38 men who have sex with men: Identifying needs for the Asia Pacific Region.). *AIDS*  
39 *Educ Prev* 2004;16:45–54.  
40  
41  
42  
43  
44

45  
46 68 ePPI Centre. *Quality and relevance appraisal framework for systematic reviews*.  
47 *London2011*. <http://eppi.ioe.ac.uk/> (accessed 4 December 2011).  
48  
49  
50

51  
52 79 Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA Statement for reporting  
53 systematic reviews and meta-analyses of studies that evaluate health care  
54  
55  
56  
57  
58  
59  
60

Formatted: No underline, Font color: Auto,  
Spanish (Argentina)



1  
2  
3  
4  
5  
6 interventions: explanation and elaboration. *PLoS Med* 2009;**6**:1–28.

7  
8  
9  
10 ~~8~~<sup>10</sup> Socialist Republic of Vietnam. *UNGASS Country Progress Report*. Hanoi,  
11 Vietnam: United Nations 2010.

12  
13  
14  
15  
16 ~~9~~ Vietnam Administration for AIDS Control and Prevention. *Vietnam HIV/AIDS*  
17 *Estimates and Projections, 2007-2012*. Hanoi, Vietnam: Vietnam Ministry of  
18 Health 2009.

19  
20  
21  
22  
23  
24 ~~10~~<sup>11</sup> Fontaine C. Policy environment and MSM in Vietnam. Personal  
25 communication. (Garcia MC, Hanoi: 2011).

26  
27  
28  
29  
30 ~~11~~<sup>12</sup> Vietnam Ministry of Health. *Results from the HIV/STI Integrated Biological and*  
31 *Behavioral Surveillance (IBBS) in Vietnam, 2005-2006*. Hanoi: Ministry of Health  
32 2006.

33  
34  
35  
36  
37  
38 ~~12~~<sup>13</sup> Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
39 City. (Unpublished).

40  
41  
42  
43  
44 ~~13~~<sup>14</sup> Le MG, Clatts M. *Men selling sex to other men in Hanoi: findings from an*  
45 *ethno-epidemiological study*. Hanoi: UNAIDS; 2009. [www.unaids.org.vn](http://www.unaids.org.vn)  
46 (accessed 13 December 2011).

47  
48  
49  
50  
51  
52 ~~14~~<sup>15</sup> Colby D, Minh TT, Toan TT. Down on the farm: homosexual behaviour, HIV  
53 risk and HIV prevalence in rural communities in Khanh Hoa province, Vietnam.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

*Sex Transm Infect* 2008;**84**:439–443.

~~45~~16 Nguyen Q, Schoenbach VJ, Le B, et al. HIV risk behaviors of Vietnamese men who have sex with men: results of a national online survey. In: *The 7th Vietnamese Education Foundation Fellows and Scholars Conference; 3-5 January 2010*; New York: Rensselaer Polytechnic Institute 2010.

Formatted: No underline, Font color: Auto, Spanish (Argentina)

~~46~~17 Colby D, Mimiaga M. Results of research on male sex workers in Ho Chih Minh City. (Unpublished).

~~47~~18 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh City. (Unpublished).

~~48~~19 Lowe D, Thien P. *Rapid situation and response assessment of HIV and AIDS programs for men who have sex with men in Vietnam. DRAFT REPORT*. Hanoi, Vietnam: Vietnam Ministry of Health - Vietnam Administration for AIDS Control and Prevention (VAAC) 2010.

~~49~~20 Ho Chi Minh City Provincial AIDS Committee. The HIV epidemic in Ho Chi Minh City: Where is it going? Ho Chi Minh City, Vietnam: USAID 2006.

21 Holtgrave D, McGuire J. Impact of Counselling in Voluntary Counselling and Testing Programs for Persons at Risk for or Living with HIV Infection. *Clinical Infectious Diseases*. 2007; **44**(3): 360-363.

1  
2  
3  
4  
5  
6 | 2022 Nguyen NT, Keithly SC. A qualitative study on the sexual behaviour of people  
7 living with HIV in Vietnam. *AIDS Care* Published Online First: 24 January 2012.  
8  
9 doi:10.1080/09540121.2011.644230  
10

11  
12  
13  
14 | 2123 Clatts MC, Giang LM, Goldsamt LA, et al. Male sex work and HIV risk among  
15 young heroin users in Hanoi, Vietnam. *Sex Health* 2007;4:261–267.  
16  
17

18  
19  
20 | 2224 Tran TN, Le TMP, Nguyen TV. *RESEARCH REPORT: MSM in Vietnam -*  
21 *social stigma and consequences*. Hanoi, Vietnam: STDs/HIV/AIDS Prevention  
22 Center (SHAPC) 2009.  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

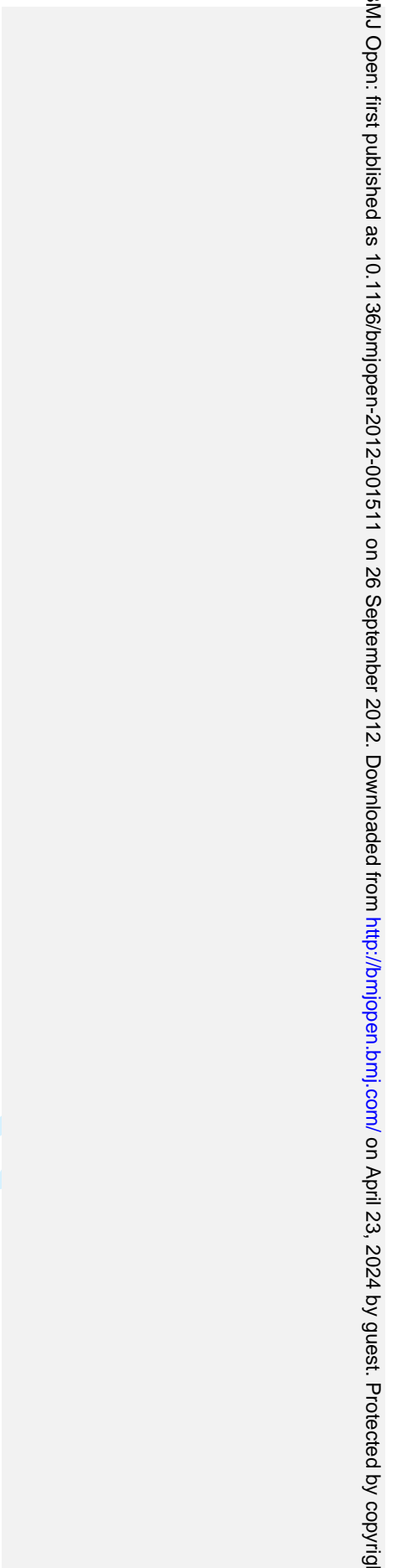
Formatted: No underline, Font color: Auto, Spanish (Argentina)

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Figure Legend**

**Figure 1: Literature search flow diagram<sup>[79]</sup>**

For peer review only



1  
2  
3 **Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM)**  
4  
5 **in Vietnam: a systematic review**  
6  
7

8 Macarena C García, MA ; Samantha B Meyer, PhD; Paul Ward, PhD  
9  
10

11  
12  
13 **ARTICLE SUMMARY**  
14

15 **Article Focus:**  
16

- 17
- 18 • Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam  
19 draws concern from the region and the world. Multiple epidemiological and behavioural  
20 studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam, the  
21 first study dating back to 1993.  
22  
23
  - 24 • The current study will review and analyze original studies on HIV prevalence and risk  
25 behaviours among men who have sex with men (MSM) in Vietnam.  
26  
27

28  
29  
30  
31  
32 **Key Messages:**  
33

- 34
- 35 • Although a systematic review of research on Vietnamese MSM and HIV epidemiology  
36 was published in 2004, the results presented only include original studies conducted up to  
37 2001. Since that time, over a dozen studies on MSM in Vietnam have been conducted  
38 and are the topic of this review.  
39
  - 40 • This work starts off where the previous systematic review left off. It finds that the  
41 majority of study findings published and/or presented at national/international  
42 conferences reveal rapidly increasing rates of HIV infection and an alarming shift in HIV  
43 epidemiology among this high-risk population in Vietnam within the last decade.  
44  
45
  - 46 • This work highlights the need for large scale targeted and MSM-friendly prevention  
47 interventions for MSM in Vietnam to address the risks posed by low consistent condom  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 use; low lubrication use; high levels of unprotected anal intercourse; and multiple and  
4  
5 concurrent sexual partnerships.  
6  
7

### 8 **Strengths and Limitations**

- 9
- 10 • The current study design employed data extraction and validation techniques. Two  
11 academics validated and independently scored the data throughout this systematic  
12 literature review. The researchers addressed and resolved conflicts in the data.  
13  
14
  - 15 • One limitation of the study included the fact that the researchers were not blinded to the  
16 purpose of the study.  
17  
18
  - 19 • Another limitation includes that only studies published in English were included; studies  
20 published in other languages were omitted.  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
<b>TITLE</b>			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Cover
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2, 3
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3, 4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3, 4
<b>METHODS</b>			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	N/A
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4, 5
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4, 5
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4, 5
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4, 5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5 - 7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5 - 7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	N/A
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$ for each meta-analysis).	N/A

For peer review only - <http://bmjopen.bmj.com/site/about/guidelines.xhtml>

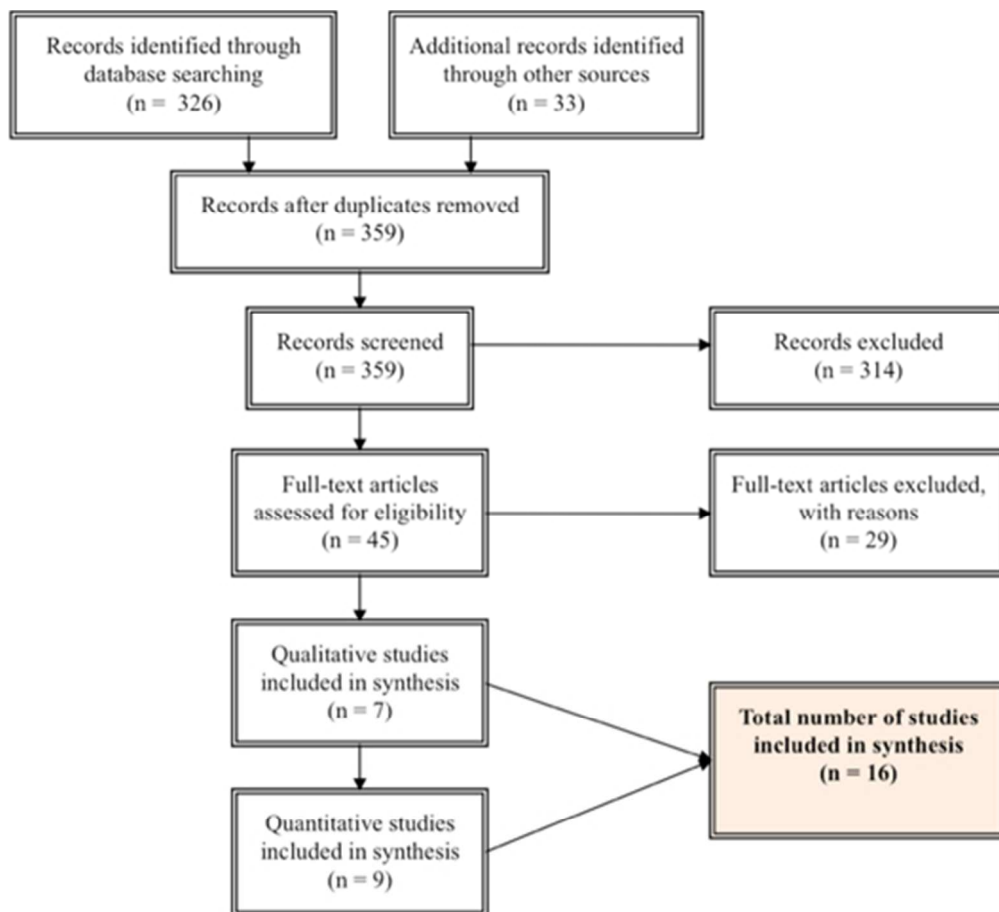
# PRISMA 2009 Checklist

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	7
<b>RESULTS</b>			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	5 - 7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	N/A
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	14 - 15
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	5 - 7
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
<b>DISCUSSION</b>			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	8 - 17
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	5 - 7
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	8 - 17
<b>FUNDING</b>			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	17

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097





186x169mm (72 x 72 DPI)

only

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



**Elevated HIV prevalence and risk behaviors among men who have sex with men (MSM) in Vietnam: a systematic review**

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2012-001511.R2
Article Type:	Research
Date Submitted by the Author:	21-Aug-2012
Complete List of Authors:	García, Macarena; Flinders University, Discipline of Public Health Meyer, Samantha; Flinders University, Discipline of Public Health Ward, Paul; Flinders University, Discipline of Public Health
<b>Primary Subject Heading</b>:	Sexual health
Secondary Subject Heading:	Public health
Keywords:	HIV, AIDS, Homosexuality, Gay men, Sexual behaviour

SCHOLARONE™  
Manuscripts

1  
2  
3 **Elevated HIV prevalence and risk behaviours among men who have sex with men**  
4 **(MSM) in Vietnam: a systematic review**  
5  
6

7 Macarena C García, MA<sup>1</sup>  
8 Samantha B Meyer, PhD<sup>1</sup>  
9 Paul Ward, PhD<sup>1</sup>  
10

11 <sup>1</sup>Discipline of Public Health, Flinders University, Adelaide, Australia  
12  
13

14  
15 **Corresponding author contact details.**

16 Macarena C García  
17 US Embassy/Maseru  
18 2340 Maseru Place  
19 Dulles, VA 20189  
20 Tel +1.909.610.6005  
21 Fax +1 909 629 9011  
22 Email [macarena.c.garcia@gmail.com](mailto:macarena.c.garcia@gmail.com)  
23  
24

25  
26 **Keywords.**

27 HIV; AIDS; gay men; homosexuality; sexual behaviour.  
28  
29

30  
31 **Word count.**

32 3,743 (including tables; excluding abstract, key messages box and acknowledgements)  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam: a systematic review

### ABSTRACT

*Objectives:* To review and analyze original studies on HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam.

*Design:* Systematic literature review. Comprehensive identification of material was conducted by systematic electronic searches of selected databases. Inclusion criteria included studies conducted from 2002 onwards, following a systematic review concluding in 2001 conducted by Colby, Nghia Huu, and Doussantousse. Data analysis was undertaken through the application of both the Cochrane Collaboration and ePPI Centre approaches to the synthesis of qualitative and quantitative studies.

*Setting:* Vietnam.

*Results:* Sixteen studies, undertaken during 2005-2011, were identified that met the inclusion criteria. The analysis showed that HIV prevalence among MSM in Vietnam has increased significantly (from 9.4 in 2006 to 20% in 2010 in Hanoi, for instance) and that protective behaviours, such as condom use and HIV testing and counselling, continue at inadequately low levels.

*Conclusions:* Increasing HIV prevalence and the lack of effective protective behaviours such as consistent condom use during anal sex among MSM in Vietnam indicate a potential for a more severe HIV epidemic in the future unless targeted and segmented comprehensive HIV prevention strategies for MSM in Vietnam are designed and programs implemented.

## KEY MESSAGES (BOX)

Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam draws concern from the region and the world. Multiple epidemiological and behavioural studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam, the first study dating back to 1993. Although a systematic review of research on Vietnamese MSM and HIV epidemiology was published in 2004, the results presented only include original studies conducted up to 2001. Since that time, over a dozen studies on MSM in Vietnam have been conducted and are the topic of this review.

This work starts off where the previous systematic review left off. It finds that the majority of study results published and/or presented at national/international conferences reveal rapidly increasing rates of HIV infection and an alarming shift in HIV epidemiology among this high-risk population in Vietnam within the last decade.

This work highlights the need for large scale targeted and MSM-friendly prevention interventions for MSM in Vietnam to address the risks posed by:

- low levels of consistent condom use
- low lubrication use
- high levels of unprotected anal intercourse
- multiple and concurrent sexual partnerships

## ARTICLE SUMMARY

### Article Focus:

- Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam draws concern from the region and the world. Multiple epidemiological

1  
2  
3 and behavioural studies have addressed HIV prevalence and risk behaviours  
4 among MSM in Vietnam, the first study dating back to 1993.

- 5  
6  
7  
8  
9  
10  
11
- The current study will review and analyze original studies on HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam.

### 12 **Key Messages:**

- 13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42
- Although a systematic review of research on Vietnamese MSM and HIV epidemiology was published in 2004, the results presented only include original studies conducted up to 2001. Since that time, over a dozen studies on MSM in Vietnam have been conducted and are the topic of this review.
  - This work starts off where the previous systematic review left off. It finds that the majority of study findings published and/or presented at national/international conferences reveal rapidly increasing rates of HIV infection and an alarming shift in HIV epidemiology among this high-risk population in Vietnam within the last decade.
  - This work highlights the need for large scale targeted and MSM-friendly prevention interventions for MSM in Vietnam to address the risks posed by low consistent condom use; low lubrication use; high levels of unprotected anal intercourse; and multiple and concurrent sexual partnerships.

### 43 **Strengths and Limitations**

- 44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60
- The current study design employed data extraction and validation techniques. Two academics validated and independently scored the data throughout this systematic literature review. The researchers addressed and resolved conflicts in the data.
  - One limitation of the study included the fact that the researchers were not blinded to the purpose of the study.

- Another limitation includes that only studies published in English were included; studies published in other languages were omitted.

- 

## BACKGROUND

The HIV/AIDS epidemic in Vietnam is still in a concentrated phase, with the highest prevalence rates found among specific populations at higher risk; these include injecting drug users (IDU), female sex workers (FSW) and MSM. As documented by the Ministry of Health Estimates and Projections Project Report,[1] MSM populations are larger than those of the other groups, and are primarily concentrated in urban areas such as Ho Chi Minh City (64,247), the Red River Delta (60,698), the Mekong River Delta (73,727) and Hanoi (35,436). In these urban centers, IDU and FSW population estimates are lower.

According to UNAIDS,[2] prevalence in the general population is estimated at 0.53% and an estimated 243,000 Vietnamese were living with HIV and/or AIDS in 2009. Of all reported HIV cases, 78.9% are in the age group 20-39, with males accounting for 85.2% of total reported HIV cases. The average age of people living with HIV is decreasing and heterosexual transmission is becoming more significant.[2]

Unlike Thailand to the west, the epidemic in Vietnam is not as severe. UNAIDS[2] reports that the epidemics in Ho Chi Minh City (HCMC) and the north-east coast initiated earlier, while epidemics in other parts of the country are much more recent. According to UNAIDS,[2] "this variability has resulted in a geographic concentration of

1  
2  
3 HIV cases in large cities and provinces where the local HIV epidemic in groups of  
4  
5 IDUs, FSWs and MSM is substantial."  
6  
7  
8

9  
10 Male-to-male sexual contact has been an important route of HIV-1 infection since  
11  
12 HIV/AIDS was first identified nearly 30 years ago. In the past few years, there has been  
13  
14 increased concern about new, newly identified, and resurging epidemics of HIV  
15  
16 infection in men who have sex with men (MSM) on a global level.[3,4] Against the  
17  
18 backdrop of low and declining adult HIV prevalence in most countries, MSM continue  
19  
20 to be disproportionately affected by HIV infection.[3] In Asia, MSM have 18.7 times  
21  
22 the odds of being HIV infected compared with someone in the general adult  
23  
24 population.[3] In recent years, scattered epidemiological research has identified high  
25  
26 HIV prevalence among MSM in several Asian countries, with varying degrees of study  
27  
28 findings and conclusions across countries. Recent data made available through the  
29  
30 presentation of preliminary Integrated Biological and Behavioral Survey (IBBS) results  
31  
32 suggest an exponential increase in HIV prevalence among MSM in both Hanoi and Ho  
33  
34 Chi Minh City, from 9.4% and 5.3% in 2006, respectively, to 20% and 14% in 2009,  
35  
36 respectively.[5]  
37  
38  
39  
40  
41  
42

43 Rapidly rising prevalence rates among MSM in Vietnam draws concern from the region  
44  
45 and the world. Multiple epidemiological and behavioural studies have addressed HIV  
46  
47 prevalence and risk behaviours among MSM in Vietnam, the first study dating back to  
48  
49 1993.[6] Although a comprehensive and systematic review of research on Vietnamese  
50  
51 MSM and risk factors for HIV was undertaken by Colby, Nghia Huu, and  
52  
53 Doussantousse,[7] the results capture original studies conducted up to 2001. Since that  
54  
55 time, over a dozen biological and behavioural studies on MSM in Vietnam have been  
56  
57  
58  
59  
60



1  
2  
3 conducted and are the topic of this review. This systematic review sets forth a summary  
4  
5 analysis of identified additional studies, highlighting the current state of HIV prevalence  
6  
7 and risk behaviour among this at-risk population.  
8  
9

## 10 11 **METHOD**

### 12 13 **Search Strategy**

14  
15 Original studies investigating HIV prevalence and risk behaviours among MSM in  
16  
17 Vietnam were identified by searching both electronic databases (PubMed, BioMed,  
18  
19 MEDLINE, and Google Scholar) and conference proceedings. Guided by the search  
20  
21 protocol applied in a similar review of global scope in Baral et al,[3] the following  
22  
23 medical subject heading (MESH) terms were used as title keywords in database  
24  
25 searches conducted: HIV AND (MSM OR homosexual AND Viet\*) OR (men who have  
26  
27 sex with men AND Viet\*) OR (Human Immune Deficiency Syndrome), and limited to  
28  
29 reports in the English language. Additional studies were also identified through cross-  
30  
31 referencing, examination of the bibliographies of retrieved articles and making contact  
32  
33 with primary researchers and authors in Vietnam.  
34  
35  
36  
37  
38  
39

40  
41 Inclusion criteria included the following: studies on HIV prevalence and risk behaviour  
42  
43 data among MSM populations in Vietnam (including homosexual, bisexual, male sex  
44  
45 workers, and transgenders); publication in a peer-reviewed journal; and, an abstract at a  
46  
47 conference. Gray literature was identified and included on a case-by-case basis. For  
48  
49 example, if the studies were not published in a peer-reviewed journal, though  
50  
51 commissioned by the Government of Vietnam and/or an International Non-  
52  
53 Governmental Organization (NGO), the studies were included.  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Exclusion criteria were adapted from similar studies with global breadth, which resulted in a standardized method of excluding studies that did not meet rigorous pre-determined minimum standards.[3] Articles/abstracts presenting reviews of several studies were omitted, and only original study findings were included in this systematic review. The ePPI Centre quality and relevance appraisal framework,[8] discussed in the proceeding section, was used to summarize the weight of evidence each study could contribute to the review's findings, and was an important component of the exclusion criteria.

### **Data extraction and analysis**

The initial search strategy yielded a total of 326 papers. This number was subsequently reduced through a number of stages, using the inclusion and exclusion criteria outlined above. However, only the final sixteen studies were assessed against the ePPI Centre quality and relevance appraisal framework.[8] The titles of the papers were reviewed for geographic and substantive relevance, which reduced the number to 12. Copies of these papers were obtained and respective bibliographies were reviewed in order to identify additional papers of relevance. Primary researchers and authors in Vietnam with published expertise in MSM issues were contacted which resulted in the collection of 33 additional documents not available in the database searches conducted (ie, conference papers, presentations, preliminary study findings). The last step was to apply the inclusion and exclusion criteria to the additional documents retrieved. The final number of papers for review was 16.

Data extraction was performed using a template designed for this purpose. For all studies in this review, the following data were extracted from original publications:

1  
2  
3 1. Descriptive and Substantive Data: a) first author and year of publication; b)  
4 study site and period; c) sampling methods; d) sampling size and age of  
5 participants; e) methods and results of HIV infection detection; f) reported risk  
6 behaviours; g) outcome measures; and  
7  
8

9  
10  
11 2. ePPI Quality and Relevance Appraisal: a) trustworthiness of results judged by  
12 the quality of the study within the accepted norms for undertaking the particular  
13 type of research design used in the study; b) appropriateness of the use of the  
14 study design for addressing the systematic review's research question; c)  
15 appropriateness of focus for the research for answering the review question; and,  
16  
17  
18  
19  
20  
21  
22  
23  
24 d) judgment of overall weight of evidence based on the assessments made for  
25 each of the criteria above.

26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
Data extraction and validation was carried out by one of authors (MCG) and abstraction  
methods and data extraction were independently scored and validated by a second  
academic (SBM). Conflicts between abstractors were settled by subsequent discussion  
and when appropriate, by contacting the authors of the study in question for further  
verification. Abstractor and reviewers were not blinded to the purpose of this study, nor  
blinded to author affiliations. Findings from extracted studies were analyzed with a  
focus on exploring HIV prevalence and risk behaviour among MSM in Vietnam.

## RESULTS

The systematic review of original studies yielded the identification of two main themes.  
The first theme is formal and includes government-owned data from biological and  
behavioural surveillance studies carried out in Vietnam in 2006 and 2009. These data  
are considered official and are often cited in peer reviewed publications, conference  
papers/presentations, and reports to the United Nations General Assembly Special  
Session on HIV/AIDS (UNGASS). The second theme is less formal and includes

1  
2  
3 studies carried out by independent researchers, universities, and non-governmental  
4  
5 organisations. These studies address gaps in existing knowledge about HIV risk and  
6  
7 behaviour, and include more comprehensive data sets than those found in official  
8  
9 surveillance reports.  
10

### 11 12 13 **Biological and behavioural surveillance**

14  
15 MSM are not part of the national surveillance system which tracks HIV incidence and  
16  
17 prevalence among Female Sex Workers (FSW) and IDU, among others.[10] However,  
18  
19 MSM are now a target group for future surveillance efforts in Vietnam, having been  
20  
21 included in the *Estimates and Projections* Project of 2009.[1] According to  
22  
23 Fontaine[11] at the United Nations Joint Programme for HIV/AIDS (UNAIDS) office in  
24  
25 Vietnam, MSM have been included as a ‘pilot’ group in the newly established HIV  
26  
27 sentinel surveillance plus behavioural surveillance initiative in the 2010 and 2011  
28  
29 rounds (data not yet available). To date, the most prominent biological and behavioural  
30  
31 studies to include MSM as an at-risk group for HIV infection have been the two IBBS  
32  
33 rounds, 2005-2006[12] and 2009.[5]  
34  
35  
36  
37  
38  
39  
40

41 The 2009 IBBS sampled 1,596 MSM in Hanoi, Hai Phong, Ho Chi Minh City, and Can  
42  
43 Tho. Data were not disaggregated between male identified MSM, and transgenders, but  
44  
45 was disaggregated by men reporting transactional sex and those not. Along with HIV  
46  
47 prevalence and risk behaviours, sexually transmitted infections (STI) were also  
48  
49 measured (see table 1, below).  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Table 1: STI<sup>1</sup> prevalence among MSM (2009 IBBS)**

Province	MSM who reported transactional sex	MSM who did <u>not</u> report transactional sex
Hanoi	18.7%	13.4%
Hai Phong	No data available	7.5%
Ho Chi Minh City	21.5%	21.1%
Can Tho	17.7%	17.3%

Source: Nguyen and Tran 2010[5]

Although HIV prevalence was highest among MSM in Hanoi not reporting transactional sex (19.9%), prevalence in Hai Phong and Ho Chi Minh City is equally concerning, at 16.6% and 14.4% among MSM not reporting transactional sex.[5] The 2009 IBBS data show that MSM reporting transactional sex have a lower HIV prevalence rate in all provinces where IBBS conducted surveys, except for Can Tho where MSM reporting transactional sex had nearly a two-fold HIV prevalence rate compared to MSM who did not report transactional sex (8.9% and 5% respectively). The biological and behavioural survey from Ho Chi Minh City reveals a 16% HIV prevalence rate,[13] slightly lower than the results from the 2009 IBBS,[5] which showed a prevalence rate of 16.4%. Approximately 47% of Ho Chi Minh City MSM in the Ho Chi Minh City study reported having sex with another male for transactional purposes in the last twelve months, with 16% reporting to have injected drugs in their lifetime and 41.7% of those having injected in the last year.[5] However, the 2009 IBBS shows higher rates of injecting drug use among HIV infected MSM in Hanoi, Ho Chi Minh City, and Can Tho.

---

<sup>1</sup> Includes Syphilis, rectal and genital Chlamydia and Gonorrhoea

1  
2  
3 According to preliminary data from the 2009 IBBS,[5] HIV prevalence among MSM in  
4 Hanoi and Ho Chi Minh City has significantly increased since the first IBBS round in  
5 2006. Among MSM not reporting transactional sex in Hanoi, HIV prevalence nearly  
6 doubled (from 11% to 20%), and in Ho Chi Minh City HIV prevalence among MSM  
7 not reporting transactional sex nearly tripled going from 6% in 2006 to 16% in 2009.[5]  
8  
9

10  
11  
12  
13  
14  
15  
16 Among both MSM reporting transactional sex and those who did not, a significant  
17 percentage reported sex with regular female partners, as well as FSW. In Can Tho, Ho  
18 Chi Minh City and Hanoi, more than 45% of MSM who reported transactional sex also  
19 reported having a regular female sexual partner (56%, 47%, and 51% respectively).  
20 25% of MSM in Can Tho reported having sex with an FSW, 18% in HCMC and 20% in  
21 Hanoi reported the same.[5] Conversely, sex with male sex workers was much lower  
22 than sex with female sex workers among MSM reporting transactional sex.[5] MSM  
23 who did not report transactional sex reported higher rates of sex with consensual  
24 partner/s and sex with a regular female partner.[5]  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35

36 Comparisons between the data from 2006 and 2009 rounds of IBBS reveal that  
37 consistent condom use with consensual partners among MSM reporting no transactional  
38 sex decreased in Ho Chi Minh City, going from 38% in 2006 to 30% in 2009. Similarly,  
39 among this group of MSM, consistent condom use with regular female partners  
40 decreased slightly, from 27% to 24%. However, dramatic increases are noted in Hanoi  
41 where consistent condom use with consensual partners went from 30% in 2006 to 65%  
42 in 2009. There was also an increase in reported consistent condom use with regular  
43 female partners among MSM in Hanoi, from 23% in 2006 to 32% in 2009.[5] Although  
44 the increase in consistent condom use is important and worth noting, reported consistent  
45 condom use among MSM remains low and comparable to low condom-use among other  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

at-risk groups in Vietnam, such as commercial sex workers – the only outlier being condom use among MSM with consensual partner in Hanoi. (see table 2, below).

**Table 2: Consistent condom use: comparison between FSW and MSM (2009 IBBS)**

Province	Venue-based FSW	Street-based FSW	MSM w/consensual partner	MSM w/regular female partner
Hanoi	38%	33%	65%	32%
Ho Chi Minh City	32%	23%	30%	24%

Source: Nguyen and Tran 2010[5]

### Epidemiological and behavioural studies

In addition to IBBS rounds, many independent researchers, organisations and universities have carried out epidemiological and behavioural studies on MSM in Vietnam. Le and Clatts [14] conducted a behavioural study in 2005 among 110 male sex workers in Hanoi. Also in 2005, Colby, Minh and Toan[15] carried out a study on HIV risk and prevalence among MSM living in rural Vietnam, the first study of its kind to study this population in a rural setting. Nguyen, Schoenbach, Huynh and Le[16] presented behavioural data the 7th Vietnamese Education Foundation Fellows and Scholars Conference, collected from over 6,000 MSM through an online forum. Colby and Mimiaga[17] have also made available preliminary findings from their study of MSW in Ho Chi Minh City, undertaken in 2009 and 2010. Finally, Nguyen[18] has released preliminary findings from a biological and behavioural survey conducted in Ho Chi Minh City in 2010, among 300 MSM, which was independent from the national 2009 IBBS. The latter two studies represent unpublished data which have not been peer reviewed and therefore are not included in this formal systematic review. However, the preliminary data from these studies are critical to understanding the HIV risk

1  
2  
3 behaviours among MSM in Vietnam, especially among male sex workers, a risk group  
4  
5 that has been historically under-studied.  
6  
7

8  
9  
10 In the Colby et al[17] study on MSW, 41% reported having sex with female/s, 8%  
11 reported having sex with FSW and 16% having sex with MSW in 2009. Those figures  
12 decreased in 2010 to 35%, 5% and 9%, respectively. [17] In comparison, Nguyen et al's  
13 online study[16] yielded very different results, with only 7.6% of 3,231 MSM surveyed  
14 reporting both male and female sexual partners. In the Colby et al study,[17] 36% of  
15 MSM reported having unprotected anal intercourse in the past month in 2009, with a  
16 decrease to 22% in 2010 among the same MSM study cohort. Nearly a quarter of MSM  
17 in Colby et al's study[17] reported unprotected anal sex with male client/s in 2009 and  
18 2010 (22% and 21% respectively).  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29

30  
31  
32 The Hanoi MSW study by Le and Clatts[14] found that most men who sell sex in Hanoi  
33 came from other provinces (79%), with most selling sex for economic survival and the  
34 majority reporting their exclusive attraction to women (74%). The Le and Clatts  
35 study[14] also revealed that 58% of MSW had used at least one type of illicit drug in the  
36 past (58%). For those that reported illicit drug use, they most commonly used drugs in  
37 the past 90 days, and the most frequent drug used was the injection of heroin (50%). In  
38 this particular study, higher levels of condom use were reported than in the Colby et al  
39 study,[17] with 65% of MSW reporting condom use during anal sex. [13] Of the MSW  
40 reporting Heroin injection, 42% reported having insertive anal sex with their most  
41 recent sex client, with no condom use in 47% of cases.[14] One third of the 110 MSW  
42 interviewed in Hanoi reported having paid for sex in the last 90 days, with 81% buying  
43 sex from FSW and only 19% buying sex from other MSW.[14]  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60



Colby et al studied rural MSM populations in Khanh Hoa province, particularly focusing on HIV risk and prevalence.[15] Of the 216 MSM living in rural areas, 46% described their sexual orientation as bisexual, 9% as heterosexual and 45% as homosexual.[15] This was the first survey to confirm that MSM not only live in urban settings, but can also be found in rural areas, where the majority of Vietnam's population live, and are relatively easy to identify.[15] As with urban MSM, this study revealed that vaginal sex was relatively common, with 36% of rural MSM engaging in vaginal sex with a female partner in the previous six months. However, anal sex with casual male partners was more common, with 47% of rural MSM having engaged in anal intercourse with a casual male partner in the previous six months. All MSM in this study tested for HIV were found to be negative.[15] However, according to Lowe and Thien,[19] HIV testing among a group of 800 MSM in Khanh Hoa province revealed a prevalence rate of 1.9%. Table 3, below, provides a summary of HIV prevalence and consistent condom use across all studies included in this review.

**Table 3: HIV prevalence and consistent condom use among MSM in Vietnam**

Location	Year	Population	HIV prevalence	Consistent condom use	Reference
National	2010	MSM	No data	72% (average)	Nguyen Q, Schoenbach VJ, et al
	2009	MSM	5%	No data	Fridae MSM Sex Survey
	2009	MSM	2%	No Data	MOH; 2009 Estimates and Projections
Hanoi	2009	MSM/MSW	MSW: 14.3% MSM: 19.9%	<i>With:</i> Consensual partners: 65% Regular female partners: 32%	MOH; 2009 IBBS
	2009	MSM	3.8%	No data	MOH; 2009 Estimates and

					Projections
	2009	MSW	3%	<i>During anal sex acts:</i> 65%	Le MG & Clatts M. <i>(unpublished results)</i>
	2007	MSM/MSW	MSW: 29.1% MSM: 37.1%	<i>MSW data only:</i> Receptive anal sex: 28.6% Insertive anal sex: 52.6%	Clatts MC, Giang LM et al
	2006	MSM	9.4%	<i>With:</i> Male consensual partners: 29% Male clients: 33% MSW: 24% Female partners: 24% Female clients: 19% FSW***: 41%	MOH; 2006 IBBS
Hai Phong	2009	MSM/MSW	MSW: 14.8% MSM: 16.6%	No data	MOH; 2009 IBBS
Ho Chi Minh City	2011	MSW	6.3%	No data	Colby D & Mimiaga M <i>(unpublished results)</i>
	2010	MSM	16%	<i>During anal sex:</i> Always: 29.7% Almost always: 37.0%	Nguyen <i>(unpublished results)</i>
	2009	MSM/MSW	MSW: 16.4% MSM: 14.4%	<i>With:</i> Consensual partners: 30% Regular female partners: 24%	MOH; 2009 IBBS
	2009	MSM	9.4%	No data	MOH; 2009 Estimates and Projections
	2008	MSM	Total: 8% Transgender: 6.8% Non-transgender: 7% Bisexual: 13.5% Sex worker: 33.3%	<i>With:</i> Casual partners: 50.9% Regular partners: 34.2% Male sex workers: 57.9% Foreign partners: 58.1%	Nguyen TA, Nguyen HT, et al
	2006	MSM	5.3%	<i>With:</i> Male consensual partners: 37% Male clients: 51% MSW: 32% Female partners: 17% Female clients: 40% FSW: 47%	MOH; 2006 IBBS
	2005	MSM	5.8%	40%	Family Health International

Can Tho	2009	MSM/MSW	MSW: 8.9% MSM: 5.0%	No data	MOH; 2009 IBBS
Khanh Hoa	2008	MSM	0%	Urban: 68% Rural: 58%	Colby D, Minh TT, et al

## DISCUSSION

The results of this systematic review strongly suggest that HIV prevalence among MSM in Vietnam has been on the rise over time. In fact, the Ho Chi Minh City AIDS Committee[20] estimates that by 2012, the number of new HIV infections contracted by MSM in Ho Chi Minh city each year is projected to be higher than the annual number of new infections in each of the other two identified high risk groups in the city, IDU and FSW. Behavioural data, such as HIV testing, number of sexual partners and unprotected anal intercourse, also suggest reason for concern.

Knowing one's HIV status and associated counselling have been found to be associated with decreased high-risk sexual practices[21]. Although HIV counselling and testing is increasing among IDU and FSW, it remains inadequately low among MSM, and has not increased since the 2006 round of IBBS which may suggest the need for alternative testing strategies for this at-risk group.[5] Low rates of HIV testing over time may be a contributing cause to the alarming rise in HIV prevalence among MSM in Vietnam. While male-to-male sex is preferred by most of those surveyed in the studies identified above, significant numbers of MSM are also having female sexual partners due to continued family and societal pressure to conform to masculine norms. The low level of consistent condom use with these women, coupled with already relatively high rates of HIV prevalence among MSM and low rates of protective behaviour with other male sex

1  
2  
3 partners reveals yet another contributing factor to elevated HIV prevalence among  
4  
5 MSM in Vietnam..[19]  
6  
7

8  
9  
10 Nguyen et al[16] found that unprotected sex among surveyed MSM correlated with low  
11  
12 perception about risk of HIV transmission, HIV prevalence and the number of casual  
13  
14 sex partners. The findings of this review identify a need for greater HIV awareness  
15  
16 among this group, as well as programs delivering consistent and segmented prevention  
17  
18 messages. Coupled with HIV awareness raising and prevention messages, the data  
19  
20 analyzed in this review point to the need for greater access to MSM-friendly HIV  
21  
22 services, such as HIV testing and counselling, condom/lubrication provision, HIV care  
23  
24 and treatment, which would contribute to slowing the pace of HIV infections among  
25  
26 this high risk group. For example, given that HIV diagnosis often leads to safer sexual  
27  
28 practices, according to the findings of an original study by Nguyen and Kiethly[22]  
29  
30 among People Living with HIV (PHIV) in Vietnam, testing and counselling services  
31  
32 need to be expanded and segmented based on the needs of each high risk group in order  
33  
34 to increase HIV testing uptake.  
35  
36  
37  
38  
39

40 Findings from this review also suggest the need to identify and appropriately address  
41  
42 the socio-cultural and economic aspects that influence HIV infection among MSM.[23]  
43  
44 Currently, MSM continue to report not being treated equally when they present  
45  
46 themselves to public service providers, such as health clinics, schools, or public  
47  
48 administration offices. Stigma continues to be a significant barrier to accessing basic  
49  
50 and necessary services.[24] Awareness raising campaigns should also be segmented for  
51  
52 greater effectiveness, with the delivery of directed information and messaging to  
53  
54 families, government entities, and the Vietnamese population.  
55  
56  
57  
58  
59  
60

1  
2  
3 A limitation of the study design includes the omission of literature published in  
4 languages other than English; however, efforts were made to contact MSM experts and  
5 practitioners in Vietnam to ensure review's inclusiveness and breadth. Another  
6 limitation of the study design is that it included abstraction of both behavioural and  
7 biological data sets, and therefore the application of PRISMA had to be combined with  
8 the ePPI Quality and Relevance appraisal framework in order to ensure appropriate  
9 scoring methodology for diverse studies. A key strength of this review is its inclusion of  
10 behavioural data sets, as these provide insight on the rapid rise of HIV prevalence  
11 among MSM in Vietnam.  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23

#### 24 25 **ACKNOWLEDGEMENTS**

26  
27 Accurate data can be challenging to generate and disseminate in Vietnam. However, the  
28 UNAIDS/Vietnam country office and the PEPFAR/Vietnam team have diligently  
29 worked with the Government of Vietnam to improve surveillance, MARP mapping and  
30 estimates and projections. I would like to thank Christopher Fontaine at  
31 UNAIDS/Vietnam and Dr Nguyen Cuong Quoc at FHI/Vietnam for their valuable  
32 expertise and timely provision of difficult-to-access data and documentation on MSM in  
33 Vietnam.  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44

#### 45 **CONFLICT OF INTEREST DISCLOSURE STATEMENT**

46  
47 None of the authors of the above manuscript has declared any conflict of interest within  
48 the last three years which may arise from being named as an author on this manuscript.  
49  
50  
51  
52  
53

#### 54 **SOURCES OF SUPPORT**

55  
56  
57  
58  
59  
60

1  
2  
3 This study was funded in part by Flinders University post-graduate grants and  
4 independent funding.  
5  
6  
7  
8

### 9 10 **CONTRIBUTORSHIP**

11 MCG designed data extraction tools, extracted data, analysed and scored data, and  
12 drafted and revised the paper. She is guarantor. SBM scored and validated the extracted  
13 data, contributed to article revisions, and provided final approval of the version to be  
14 published. PW provided study design, contributed to article revisions, and provided  
15 final approval of the version to be published.  
16  
17  
18  
19  
20  
21

### 22 23 **DATA SHARING**

24 Abstraction dataset available from the corresponding author at  
25  
26  
27  
28  
29 [<macarena.c.garcia@gmail.com>](mailto:macarena.c.garcia@gmail.com).  
30

### 31 32 **FUNDING STATEMENT**

33 this research received no specific funding.  
34  
35

### 36 37 **REFERENCES**

- 38 1 Vietnam Administration for AIDS Control and Prevention. *Vietnam HIV/AIDS*  
39 *Estimates and Projections, 2007-2012*. Hanoi, Vietnam: Vietnam Ministry of  
40 Health 2009.  
41  
42  
43  
44
- 45 2 United Nations Joint Programme for HIV/AIDS. *Vietnam – Facts and Figures*.  
46 UNAIDS/Vietnam 2008. Retrieved 7 October 2009 from [unaids.org.vn](http://unaids.org.vn).  
47  
48  
49  
50
- 51 3 Barald S, Sifakis F, Cleghorn F, et al. Elevated risk for HIV Infection among men  
52 who have sex with men in low- and middle-income countries 2000–2006: A  
53  
54  
55  
56  
57  
58  
59  
60

- 1  
2  
3 Systematic Review. *PLoS Med* 2007;4:e339.  
4  
5  
6  
7  
8 4 van Griensven F, van Wijngaardenc JW, Barald S, et al. The global epidemic of  
9  
10 HIV infection among men who have sex with men. *Curr Opin HIV AIDS* 2009;4:  
11  
12 300–307.  
13  
14  
15  
16 5 Nguyen AT, Tran VH. HIV/STI Integrated Biological and Behavioral Surveillance  
17  
18 in Vietnam (IBBS), 2009 (Round 2). *4th National Scientific Conference on*  
19  
20 *HIV/AIDS; 1-2 December 2009, Hanoi, Vietnam*. Hanoi: National Institute of  
21  
22 Hygiene and Epidemiology (NIHE) and Vietnam Administration for HIV/AIDS  
23  
24 Control (VAAC), Ministry of Health; 2010.  
25  
26  
27  
28  
29  
30 6 Franklin, B. *The risk of AIDS in Vietnam: An Audience Analysis of Urban Men and*  
31  
32 *Sex Workers, with Guidelines for Prevention*. Hanoi: CARE International in  
33  
34 Vietnam 1993.  
35  
36  
37  
38  
39 7 Colby D, Cao NH, Doussantousse S. Men who have sex with men and HIV in  
40  
41 Vietnam: a review. (Special issue: HIV prevention for Asian and Pacific Islander  
42  
43 men who have sex with men: Identifying needs for the Asia Pacific Region.). *AIDS*  
44  
45 *Educ Prev* 2004;16:45–54.  
46  
47  
48  
49  
50 8 ePPI Centre. *Quality and relevance appraisal framework for systematic reviews.*  
51  
52 *London2011*. <http://eppi.ioe.ac.uk/> (accessed 4 December 2011).  
53  
54  
55  
56  
57 9 Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA Statement for reporting  
58  
59  
60

- 1  
2  
3 systematic reviews and meta-analyses of studies that evaluate health care  
4 interventions: explanation and elaboration. *PLoS Med* 2009;**6**:1–28.
- 5  
6  
7 10 Socialist Republic of Vietnam. *UNGASS Country Progress Report*. Hanoi,  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19 11 Fontaine C. Policy environment and MSM in Vietnam. Personal communication.  
20  
21 (Garcia MC, Hanoi: 2011).  
22  
23  
24  
25 12 Vietnam Ministry of Health. *Results from the HIV/STI Integrated Biological and*  
26  
27 *Behavioral Surveillance (IBBS) in Vietnam, 2005-2006*. Hanoi: Ministry of Health  
28  
29 2006.  
30  
31  
32  
33  
34 13 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
35  
36 City. (Unpublished).  
37  
38  
39  
40  
41 14 Le MG, Clatts M. *Men selling sex to other men in Hanoi: findings from an ethno-*  
42  
43 *epidemiological study*. Hanoi: UNAIDS; 2009. [www.unaids.org.vn](http://www.unaids.org.vn) (accessed 13  
44  
45 December 2011).  
46  
47  
48  
49 15 Colby D, Minh TT, Toan TT. Down on the farm: homosexual behaviour, HIV risk  
50  
51 and HIV prevalence in rural communities in Khanh Hoa province, Vietnam. *Sex*  
52  
53 *Transm Infect* 2008;**84**:439–443.  
54  
55  
56  
57  
58  
59  
60



- 1  
2  
3 16 Nguyen Q, Schoenbach VJ, Le B, et al. HIV risk behaviors of Vietnamese men  
4 who have sex with men: results of a national online survey. In: *The 7th Vietnamese*  
5 *Education Foundation Fellows and Scholars Conference; 3-5 January 2010*; New  
6 York: Rensselaer Polytechnic Institute 2010.  
7  
8  
9  
10  
11  
12  
13  
14 17 Colby D, Mimiaga M. Results of research on male sex workers in Ho Chih Minh  
15 City. (Unpublished).  
16  
17  
18  
19  
20  
21 18 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
22 City. (Unpublished).  
23  
24  
25  
26  
27 19 Lowe D, Thien P. *Rapid situation and response assessment of HIV and AIDS*  
28 *programs for men who have sex with men in Vietnam. DRAFT REPORT*. Hanoi,  
29 Vietnam: Vietnam Ministry of Health - Vietnam Administration for AIDS Control  
30 and Prevention (VAAC) 2010.  
31  
32  
33  
34  
35  
36  
37  
38 20 Ho Chi Minh City Provincial AIDS Committee. The HIV epidemic in Ho Chi  
39 Minh City: Where is it going? Ho Chi Minh City, Vietnam: USAID 2006.  
40  
41  
42  
43  
44  
45 21 Holtgrave D, McGuire J. Impact of Counselling in Voluntary Counselling and  
46 Testing Programs for Persons at Risk for or Living with HIV Infection. *Clinical*  
47 *Infectious Diseases*. 2007; **44**(3): 360-363.  
48  
49  
50  
51  
52  
53  
54 22 Nguyen NT, Keithly SC. A qualitative study on the sexual behaviour of people  
55 living with HIV in Vietnam. *AIDS Care* Published Online First: 24 January 2012.  
56  
57  
58  
59  
60

1  
2  
3 doi:10.1080/09540121.2011.644230  
4  
5  
6

- 7 23 Clatts MC, Giang LM, Goldsamt LA, et al. Male sex work and HIV risk among  
8 young heroin users in Hanoi, Vietnam. *Sex Health* 2007;**4**:261–267.  
9  
10  
11  
12  
13  
14 24 Tran TN, Le TMP, Nguyen TV. *RESEARCH REPORT: MSM in Vietnam - social*  
15 *stigma and consequences*. Hanoi, Vietnam: STDs/HIV/AIDS Prevention Center  
16 (SHAPC) 2009.  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Figure Legend**

**Figure 1: Literature search flow diagram[9]**

For peer review only

1  
2  
3  
4  
5  
6 **Elevated HIV prevalence and risk behaviours among men who have sex with men**  
7 **(MSM) in Vietnam: a systematic review**  
8

9  
10 Macarena C García, MA<sup>1</sup>  
11 Samantha B Meyer, PhD<sup>1</sup>  
12 Paul Ward, PhD<sup>1</sup>  
13

14 <sup>1</sup>Discipline of Public Health, Flinders University, Adelaide, Australia  
15

16  
17 **Corresponding author contact details.**

18 Macarena C García  
19 US Embassy/Maseru  
20 2340 Maseru Place  
21 Dulles, VA 20189  
22 Tel +1.909.610.6005  
23 Fax +1 909 629 9011  
24 Email [macarena.c.garcia@gmail.com](mailto:macarena.c.garcia@gmail.com)  
25

26  
27 **Keywords.**

28 HIV; AIDS; gay men; homosexuality; sexual behaviour.  
29

30  
31 **Word count.**

32 2,993,7430 (including tables; excluding abstract, key messages box and  
33 acknowledgements)  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam: a systematic review

### ABSTRACT

*Objectives:* To review and analyze original studies on HIV prevalence and risk behaviours among men who have sex with men (MSM) in Vietnam.

*Design:* Systematic literature review. Comprehensive identification of material was conducted by systematic electronic searches of selected databases. Inclusion criteria included studies conducted from 2002 onwards, following a systematic review concluding in 2001 conducted by Colby, Nghia Huu, and Doussantousse. Data analysis was undertaken through the application of both the Cochrane Collaboration and ePPI Centre approaches to the synthesis of qualitative and quantitative studies.

*Setting:* Vietnam.

*Results:* Sixteen studies, undertaken during 2005-2011, were identified that met the inclusion criteria. ~~Study results were frequently heterogeneous.~~ The analysis showed that HIV prevalence among MSM in Vietnam has increased significantly (from 9.4 in 2006 to 20% in 2010 in Hanoi, for instance)-and that protective behaviours, such as condom use and HIV testing and counselling, continue at inadequately low levels.

*Conclusions:* Increasing HIV prevalence and the lack of effective protective behaviours such as consistent condom use during anal sex among MSM in Vietnam indicate a potential for a more severe HIV epidemic in the future unless targeted and segmented comprehensive HIV prevention strategies for MSM in Vietnam are designed and programs implemented.

### KEY MESSAGES (BOX)

Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam draws concern from the region and the world. Multiple epidemiological and behavioural studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam, the first study dating back to 1993. Although a systematic review of research on Vietnamese MSM and HIV epidemiology was published in 2004, the results presented only include original studies conducted up to 2001. Since that time, over a dozen studies on MSM in Vietnam have been conducted and are the topic of this review.

This work starts off where the previous systematic review left off. It finds that the majority of study ~~findings~~ results published and/or presented at national/international conferences reveal rapidly increasing rates of HIV infection and an alarming shift in HIV epidemiology among this high-risk population in Vietnam within the last decade.

This work highlights the need for large scale targeted and MSM-friendly prevention interventions for MSM in Vietnam to address the risks posed by:

- low levels of consistent condom use
- low lubrication use
- high levels of unprotected anal intercourse
- multiple and concurrent sexual partnerships

## BACKGROUND

The HIV/AIDS epidemic in Vietnam is still in a concentrated phase, with the highest prevalence rates found among specific populations at higher risk; these include injecting drug users (IDU), female sex workers (FSW) and MSM. As documented by the Ministry of Health Estimates and Projections Project Report.[1] MSM populations are

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Justified, Line spacing: Double

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

Formatted: Font: (Default) Times New Roman, 12 pt

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

larger than those of the other groups, and are primarily concentrated in urban areas such as Ho Chi Minh City (64,247), the Red River Delta (60,698), the Mekong River Delta (73,727) and Hanoi (35,436). In these urban centers, IDU and FSW population estimates are lower.

According to UNAIDS,[2] prevalence in the general population is estimated at 0.53% and an estimated 243,000 Vietnamese were living with HIV and/or AIDS in 2009. Of all reported HIV cases, 78.9% are in the age group 20-39, with males accounting for 85.2% of total reported HIV cases. The average age of people living with HIV is decreasing and heterosexual transmission is becoming more significant.[2]

Unlike Thailand to the west, the epidemic in Vietnam is not as severe. UNAIDS[2] reports that the epidemics in Ho Chi Minh City (HCMC) and the north-east coast initiated earlier, while epidemics in other parts of the country are much more recent.

According to UNAIDS,[2] "this variability has resulted in a geographic concentration of HIV cases in large cities and provinces where the local HIV epidemic in groups of IDUs, FSWs and MSM is substantial."

Male-to-male sexual contact has been an important route of HIV-1 infection since HIV/AIDS was first identified nearly 30 years ago. In the past few years, there has been increased concern about new, newly identified, and resurging epidemics of HIV infection in men who have sex with men (MSM) on a global level.[34,42] Against the backdrop of low and declining adult HIV prevalence in most countries, MSM continue to be disproportionately affected by HIV infection.[34] In Asia, MSM have 18.7 times the odds of being HIV infected compared with someone in the general adult

- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt

1  
2  
3  
4  
5  
6 population.[34] In recent years, scattered epidemiological research has identified high  
7  
8 HIV prevalence among MSM in several Asian countries, with varying degrees of study  
9  
10 findings and conclusions across countries. Recent data made available through the  
11  
12 presentation of preliminary Integrated Biological and Behavioral Survey (IBBS) results  
13  
14 suggest an exponential increase in HIV prevalence among MSM in both Hanoi and Ho  
15  
16 Chi Minh City, from 9.4% and 5.3% in 2006, respectively, to 20% and 14% in 2009,  
17  
18 respectively.[35]  
19

20  
21  
22 Rapidly rising prevalence rates among MSM in Vietnam draws concern from the region  
23  
24 and the world. Multiple epidemiological and behavioural studies have addressed HIV  
25  
26 prevalence and risk behaviours among MSM in Vietnam, the first study dating back to  
27  
28 1993.[64] Although a comprehensive and systematic review of research on Vietnamese  
29  
30 MSM and risk factors for HIV was undertaken by Colby, Nghia Huu, and  
31  
32 Doussantousse,[75] the results capture original studies conducted up to 2001. Since that  
33  
34 time, over a dozen biological and behavioural studies on MSM in Vietnam have been  
35  
36 conducted and are the topic of this review. This systematic review sets forth a summary  
37  
38 analysis of identified additional studies, highlighting the current state of HIV prevalence  
39  
40 and risk behaviour among this at-risk population.  
41  
42

## 43 **METHOD**

### 44 **Search Strategy**

45  
46 Original studies investigating HIV prevalence and risk behaviours among MSM in  
47  
48 Vietnam were identified by searching both electronic databases (PubMed, BioMed,  
49  
50 MEDLINE, and Google Scholar) and conference proceedings. Guided by the search  
51  
52 protocol applied in a similar review of global scope in Baral et al,[34] the following  
53  
54  
55  
56  
57  
58  
59  
60



1  
2  
3  
4  
5  
6 medical subject heading (MESH) terms were used as title keywords in database  
7  
8 searches conducted: HIV AND (MSM OR homosexual AND Viet\*) OR (men who have  
9  
10 sex with men AND Viet\*) OR (Human Immune Deficiency Syndrome), and limited to  
11  
12 reports in the English language. Additional studies were also identified through cross-  
13  
14 referencing, examination of the bibliographies of retrieved articles and making contact  
15  
16 with primary researchers and authors in Vietnam.

17  
18  
19  
20 Inclusion criteria included the following: studies on HIV prevalence and risk behaviour  
21  
22 data among MSM populations in Vietnam (including homosexual, bisexual, male sex  
23  
24 workers, and transgenders); publication in a peer-reviewed journal; and, an abstract at a  
25  
26 conference. Gray literature was identified and included on a case-by-case basis. For  
27  
28 example, if the studies were not published in a peer-reviewed journal, though  
29  
30 commissioned by the Government of Vietnam and/or an International Non-  
31  
32 Governmental Organization (NGO), the studies were included.

33  
34  
35  
36 Exclusion criteria were adapted from similar studies with global breadth, which resulted  
37  
38 in a standardized method of excluding studies that did not meet rigorous pre-determined  
39  
40 minimum standards.<sup>[34]</sup> Articles/abstracts presenting reviews of several studies were  
41  
42 omitted, and only original study findings were included in this systematic review. The  
43  
44 ePPI Centre quality and relevance appraisal framework,<sup>[86]</sup> discussed in the proceeding  
45  
46 section, was used to summarize the weight of evidence each study could contribute to  
47  
48 the review's findings, and was an important component of the exclusion criteria.

#### 51 **Data extraction and analysis**

52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3  
4  
5  
6 The initial search strategy yielded a total of 326 papers. This number was subsequently  
7  
8 reduced through a number of stages, using the inclusion and exclusion criteria outlined  
9  
10 above. However, only the final sixteen studies were assessed against the ePPI Centre  
11  
12 quality and relevance appraisal framework.<sup>[86]</sup> The titles of the papers were reviewed  
13  
14 for geographic and substantive relevance, which reduced the number to 12. Copies of  
15  
16 these papers were obtained and respective bibliographies were reviewed in order to  
17  
18 identify additional papers of relevance. ~~Also, p~~Primary researchers and authors in  
19  
20 Vietnam with published expertise in MSM issues were contacted which resulted in the  
21  
22 collection of 33 additional documents not available in the database searches conducted  
23  
24 (ie, conference papers, presentations, preliminary study findings). The last step was to  
25  
26 apply the inclusion and exclusion criteria to the additional documents retrieved. The  
27  
28 final number of papers for review was 16.

29  
30  
31 Data extraction was performed using a template designed for this purpose. For all  
32  
33 studies in this review, the following data were extracted from original publications:

- 34  
35  
36 1. Descriptive and Substantive Data: a) first author and year of publication; b)  
37  
38 study site and period; c) sampling methods; d) sampling size and age of  
39  
40 participants; e) methods and results of HIV infection detection; f) reported risk  
41  
42 behaviours; g) outcome measures; and
- 43  
44 2. ePPI Quality and Relevance Appraisal: a) trustworthiness of results judged by  
45  
46 the quality of the study within the accepted norms for undertaking the particular  
47  
48 type of research design used in the study; b) appropriateness of the use of the  
49  
50 study design for addressing the systematic review's research question; c)  
51  
52 appropriateness of focus for the research for answering the review question; and,  
53  
54 d) judgment of overall weight of evidence based on the assessments made for  
55  
56 each of the criteria above.

1  
2  
3  
4  
5  
6 Data extraction and validation was carried out by one of authors (MCG) and abstraction  
7  
8 methods and data extraction were independently scored and validated by a second  
9  
10 academic (SBM). Conflicts between abstractors were settled by subsequent discussion  
11  
12 and when appropriate, by contacting the authors of the study in question for further  
13  
14 verification. Abstractor and reviewers was-were not blinded to the purpose of this study,  
15  
16 nor blinded to author affiliations. Findings from extracted studies were analyzed with a  
17  
18 focus on exploring HIV prevalence and risk behaviour among MSM in Vietnam.  
19

## 20 21 22 **RESULTS**

23  
24 The systematic review of original studies yielded the identification of two main themes.  
25  
26 The first theme is formal and includes government-owned data from biological and  
27  
28 behavioural surveillance studies carried out in Vietnam in 2006 and 2009. These data  
29  
30 are considered official and are often cited in peer reviewed publications, conference  
31  
32 papers/presentations, and reports to the United Nations General Assembly Special  
33  
34 Session on HIV/AIDS (UNGASS). The second theme is less formal and includes  
35  
36 studies carried out by independent researchers, universities, and non-governmental  
37  
38 organisations. These studies address gaps in existing knowledge about HIV risk and  
39  
40 behaviour, and include more comprehensive data sets than those found in official  
41  
42 surveillance reports.  
43  
44

### 45 **Biological and behavioural surveillance**

46  
47 MSM are not part of the national surveillance system which tracks HIV incidence and  
48  
49 prevalence among Female Sex Workers (FSW) and IDU, among others.[810] However,  
50  
51 MSM are now a target group for future surveillance efforts in Vietnam, having been  
52  
53 included in the *Estimates and Projections* Project of 2009.[91] According to  
54  
55  
56  
57  
58  
59  
60

Fontaine<sup>[4011]</sup> at the United Nations Joint Programme for HIV/AIDS (UNAIDS) office in Vietnam, MSM have been included as a 'pilot' group in the newly established HIV sentinel surveillance plus behavioural surveillance initiative in the 2010 and 2011 rounds (data not yet available). To date, the most prominent biological and behavioural studies to include MSM as an at-risk group for HIV infection have been the two IBBS rounds, 2005-2006<sup>[4112]</sup> and 2009.<sup>[35]</sup>

The 2009 IBBS sampled 1,596 MSM in Hanoi, Hai Phong, Ho Chi Minh City, and Can Tho. Data were not disaggregated between male identified MSM, and transgenders, but was disaggregated by men reporting transactional sex and those not. Along with HIV prevalence and risk behaviours, sexually transmitted infections (STI) were also measured (see table 1, below).

**Table 1: STI<sup>1</sup> prevalence among MSM (2009 IBBS)**

Province	MSM who reported transactional sex	MSM who did <u>not</u> report transactional sex
Hanoi	18.7%	13.4%
Hai Phong	No data available	7.5%
Ho Chi Minh City	21.5%	21.1%
Can Tho	17.7%	17.3%

Source: Nguyen and Tran 2010<sup>[35]</sup>

Although HIV prevalence was highest among MSM in Hanoi not reporting transactional sex (19.9%), prevalence in Hai Phong and Ho Chi Minh City is equally concerning, at 16.6% and 14.4% among MSM not reporting transactional sex.<sup>[35]</sup> The

<sup>1</sup> Includes Syphilis, rectal and genital Chlamydia and Gonorrhoea

1  
2  
3  
4  
5  
6 2009 IBBS data show that MSM reporting transactional sex have a lower HIV  
7 prevalence rate in all provinces where IBBS conducted surveys, except for Can Tho  
8 where MSM reporting transactional sex had nearly a two-fold HIV prevalence rate  
9 compared to MSM who did not report transactional sex (8.9% and 5% respectively).  
10  
11 The biological and behavioural survey from Ho Chi Minh City reveals a 16% HIV  
12 prevalence rate,<sup>[1213]</sup> slightly lower than the results from the 2009 IBBS,<sup>[35]</sup> which  
13 showed a prevalence rate of 16.4%. ~~Alarmingl~~~~y~~~~Approximately~~ 47.3% of Ho Chi Minh  
14 City MSM in the Ho Chi Minh City study reported having sex with another male for  
15 transactional purposes in the last twelve months, with 16% reporting to have injected  
16 drugs in their lifetime and 41.7% of those having injected in the last year.<sup>[35]</sup> However,  
17 the 2009 IBBS shows higher rates of injecting drug use among HIV infected MSM in  
18 Hanoi, Ho Chi Minh City, and Can Tho.  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30

31  
32 According to preliminary data from the 2009 IBBS,<sup>[35]</sup> HIV prevalence among MSM  
33 in Hanoi and Ho Chi Minh City ~~have~~~~-has~~ significantly increased since the first IBBS  
34 round in 2006. Among MSM not reporting transactional sex in Hanoi, HIV prevalence  
35 nearly doubled (from 11% to 20%), and in Ho Chi Minh City HIV prevalence among  
36 MSM not reporting transactional sex nearly tripled going from 6% in 2006 to 16% in  
37 2009.<sup>[53]</sup>  
38  
39  
40  
41  
42  
43  
44

45 Among both MSM reporting transactional sex and those who did not, a significant  
46 percentage reported sex with regular female partners, as well as FSW. In Can Tho, Ho  
47 Chi Minh City and Hanoi, more than 45% of MSM who reported transactional sex also  
48 reported having a regular female sexual partner (56%, 47%, and 51% respectively).  
49 25% of MSM in Can Tho reported having sex with an FSW, 18% in HCMC and 20% in  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Hanoi reported the same.<sup>[53]</sup> Conversely, sex with male sex workers was much lower than sex with female sex workers among MSM reporting transactional sex.<sup>[53]</sup> MSM who did not report transactional sex reported higher rates of sex with consensual partner/s and sex with a regular female partner.<sup>[53]</sup> ~~Among this particular group of MSM (those not reporting transactional sex), a lower percentage reported sex with commercial clients (both female and male); however, these MSM consistently reported higher rates of sex with FSW across all four IBBS provinces, than sex with male sex workers (MSW).<sup>[3]</sup>~~

~~Unfortunately,~~ <sup>c</sup>Comparisons between the data from 2006 and 2009 rounds of IBBS reveal that consistent condom use with consensual partners among MSM reporting no transactional sex decreased in Ho Chi Minh City, going from 38% in 2006 to 30% in 2009. Similarly, among this group of MSM, consistent condom use with regular female partners decreased slightly, from 27% to 24%. However, dramatic increases are noted in Hanoi where consistent condom use with consensual partners went from 30% in 2006 to 65% in 2009. There was also an increase in reported consistent condom use with regular female partners among MSM in Hanoi, from 23% in 2006 to 32% in 2009.<sup>[53]</sup> Although the increase in consistent condom use is important and worth noting, reported consistent condom use among MSM remains ~~relatively low compared and comparable to~~ low condom-use among other at-risk groups in Vietnam, such as commercial sex workers ~~– the only outlier being condom use among MSM with consensual partner in Hanoi.~~ (see table 2, below).

**Table 2: Consistent condom use: comparison between FSW and MSM (2009 IBBS)**

Province	Venue-based FSW	Street-based FSW	MSM w/consensual partner	MSM w/regular female partner
----------	-----------------	------------------	--------------------------	------------------------------

Hanoi	38%	33%	65%	32%
Hai Phong	80%	81%	No data	No data
Ho Chi Minh City	32%	23%	30%	24%
Can Tho	80%	86%	No data	No data

Source: Nguyen and Tran 2010[53]

### Epidemiological and behavioural studies

In addition to IBBS rounds, many independent researchers, organisations and universities have carried out epidemiological and behavioural studies on MSM in Vietnam. Le and Clatts [1314] conducted a behavioural study in 2005 among 110 male sex workers in Hanoi. Also in 2005, Colby, Minh and Toan[1415] carried out a study on HIV risk and prevalence among MSM living in rural Vietnam, the first study of its kind to study this population in a rural setting. Nguyen, Schoenbach, Huynh and Le[1516] presented behavioural data the 7th Vietnamese Education Foundation Fellows and Scholars Conference, collected from over 6,000 MSM through an online forum. Colby and Mimiaga[1617] have also made available preliminary findings from their study of MSW in Ho Chi Minh City, undertaken in 2009 and 2010. Finally, Nguyen[1718] has released preliminary findings from a biological and behavioural survey conducted in Ho Chi Minh City in 2010, among 300 MSM, which was independent from the national 2009 IBBS. The latter two studies represent unpublished data which have not been peer reviewed and therefore are not included in this formal systematic review. However, the preliminary data from these studies are critical to understanding the HIV risk behaviours among MSM in Vietnam, especially among male sex workers, a risk group that has been historically under-studied.

1  
2  
3  
4  
5  
6 In the Colby et al<sup>[16,17]</sup> study on MSW, 41% reported having sex with female/s, 8%  
7 reported having sex with FSW and 16% having sex with MSW in 2009. Those figures  
8  
9  
10 decreased in 2010 to 35%, 5% and 9%, respectively<sup>[16], [17]</sup> In comparison, Nguyen et  
11 al's online study<sup>[15,16]</sup> yielded very different results, with only 7.6% of 3,231 MSM  
12 surveyed reporting both male and female sexual partners. In the Colby et al  
13 study<sup>[16], [17]</sup> 36% of MSM reported having unprotected anal intercourse in the past  
14 month in 2009, with a decrease to 22% in 2010 among the same MSM study cohort.  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Nearly a quarter of MSM in Colby et al's study<sup>[17,6]</sup> reported unprotected anal sex with male client/s in 2009 and 2010 (22% and 21% respectively).

The Hanoi MSW study by Le and Clatts<sup>[143]</sup> found that most men who sell sex in Hanoi came from other provinces (79%), with most selling sex for economic survival and the majority reporting their exclusive attraction to women (74%). The Le and Clatts study<sup>[143]</sup> also revealed that 58% of MSW had used at least one type of illicit drug in the past (58%). For those that reported illicit drug use, they most commonly used drugs in the past 90 days, and the most frequent drug used was the injection of heroin (50%). In this particular study, higher levels of condom use were reported than in the Colby et al study,<sup>[17,6]</sup> with 65% of MSW reporting condom use during anal sex<sup>[12], [13]</sup> Of the MSW reporting Heroin injection, 42% reported having insertive anal sex with their most recent sex client, with no condom use in 47% of cases.<sup>[143]</sup> One third of the 110 MSW interviewed in Hanoi reported having paid for sex in the last 90 days, with 81% buying sex from FSW and only 19% buying sex from other MSW.<sup>[143]</sup>

Colby et al studied rural MSM populations in Khanh Hoa province, particularly focusing on HIV risk and prevalence.<sup>[15,4]</sup> Of the 216 MSM living in rural areas, 46%



described their sexual orientation as bisexual, 9% as heterosexual and 45% as homosexual.[154] This was the first survey to confirm that MSM not only live in urban settings, but can also be found in rural areas, where the majority of Vietnam's population live, and are relatively easy to identify.[154] As with urban MSM, this study revealed that vaginal sex was relatively common, with 36% of rural MSM engaging in vaginal sex with a female partner in the previous six months. However, anal sex with casual male partners was more common, with 47% of rural MSM having engaged in anal intercourse with a casual male partner in the previous six months. All MSM in this study tested for HIV were found to be negative.[154] However, according to Lowe and Thien,[198] HIV testing among a group of 800 MSM in Khanh Hoa province revealed a prevalence rate of 1.9%. Table 3, below, provides a summary of HIV prevalence and consistent condom use across all studies included in this review.

**Table 3: HIV prevalence and consistent condom use among MSM in Vietnam**

Location	Year	Population	HIV prevalence	Consistent condom use	Reference
National	2010	MSM	No data	72% (average)	Nguyen Q, Schoenbach VJ, et al
	2009	MSM	5%	No data	Fridae MSM Sex Survey
	2009	MSM	2%	No Data	MOH; 2009 Estimates and Projections
Hanoi	2009	MSM/MSW	MSW: 14.3% MSM: 19.9%	<i>With:</i> Consensual partners: 65% Regular female partners: 32%	MOH; 2009 IBBS
	2009	MSM	3.8%	No data	MOH; 2009 Estimates and Projections
	2009	MSW	3%	<i>During anal sex acts:</i> 65%	Le MG & Clatts M. <i>(unpublished results)</i>
	2007	MSM/MSW	MSW: 29.1% MSM: 37.1%	<i>MSW data only:</i> Receptive anal sex: 28.6%	Clatts MC, Giang LM et al

				Insertive anal sex: 52.6%	
	2006	MSM	9.4%	<i>With:</i> Male consensual partners: 29% Male clients: 33% MSW: 24% Female partners: 24% Female clients: 19% FSW***: 41%	MOH; 2006 IBBS
Hai Phong	2009	MSM/MSW	MSW: 14.8% MSM: 16.6%	No data	MOH; 2009 IBBS
Ho Chi Minh City	2011	MSW	6.3%	No data	Colby D & Mimiaga M ( <i>unpublished results</i> )
	2010	MSM	16%	<i>During anal sex:</i> Always: 29.7% Almost always: 37.0%	Nguyen ( <i>unpublished results</i> )
	2009	MSM/MSW	MSW: 16.4% MSM: 14.4%	<i>With:</i> Consensual partners: 30% Regular female partners: 24%	MOH; 2009 IBBS
	2009	MSM	9.4%	No data	MOH; 2009 Estimates and Projections
	2008	MSM	Total: 8% Transgender: 6.8% Non-transgender: 7% Bisexual: 13.5% Sex worker: 33.3%	<i>With:</i> Casual partners: 50.9% Regular partners: 34.2% Male sex workers: 57.9% Foreign partners: 58.1%	Nguyen TA, Nguyen HT, et al
	2006	MSM	5.3%	<i>With:</i> Male consensual partners: 37% Male clients: 51% MSW: 32% Female partners: 17% Female clients: 40% FSW: 47%	MOH; 2006 IBBS
	2005	MSM	5.8%	40%	Family Health International
Can Tho	2009	MSM/MSW	MSW: 8.9% MSM: 5.0%	No data	MOH; 2009 IBBS
Khanh Hoa	2008	MSM	0%	Urban: 68% Rural: 58%	Colby D, Minh TT, et al

## DISCUSSION

~~In Vietnam, The results of this systematic review strongly suggest that HIV prevalence among MSM in Vietnam has been on the rise over time. In fact,~~ the Ho Chi Minh City AIDS Committee<sup>[2019]</sup> estimates that by 2012, the number of new HIV infections contracted by MSM in Ho Chi Minh city each year is projected to be higher than the annual number of new infections in each of the other two identified high risk groups in the city, IDU and FSW. ~~Behavioral~~Behavioural data, such as HIV testing, number of sexual partners and unprotected anal intercourse, also suggest reason for concern.

~~Although HIV counselling and testing is increasing among IDU and FSW, it remains inadequately low among MSM, and has not increased since the 2006 round of IBBS which may suggest the need for alternative testing strategies for this at risk group.[3] Knowing one's HIV status and associated counselling have been found to be associated with decreased high-risk sexual practices[21]. Although HIV counselling and testing is increasing among IDU and FSW, it remains inadequately low among MSM, and has not increased since the 2006 round of IBBS which may suggest the need for alternative testing strategies for this at-risk group.[53] Low rates of HIV testing over time may be a contributing cause to the alarming rise in HIV prevalence among MSM in Vietnam.-~~ While male-to-male sex is preferred by most of those surveyed in the studies identified above, significant numbers of MSM are also having female sexual partners due to continued family and societal pressure to conform to masculine norms. The low level of consistent condom use with these women, coupled with already relatively high rates of HIV prevalence among MSM and low rates of protective behaviour with other male sex partners reveals yet another contributing factor to

1  
2  
3  
4  
5  
6 [elevated HIV prevalence among MSM in Vietnam, a potential for HIV epidemics among](#)  
7 [MSM in Vietnam to reach a broader population.](#)<sup>[1819]</sup>  
8  
9

10  
11  
12 | Nguyen et al<sup>[165]</sup> found that unprotected sex among surveyed MSM correlated with  
13 low perception about risk of HIV transmission, HIV prevalence and the number of  
14 casual sex partners. The findings of this review identify a need for greater HIV  
15 awareness among this group, as well as programs delivering consistent and segmented  
16 prevention messages. Coupled with HIV awareness raising and prevention messages,  
17 the data analyzed in this review point to the need for greater access to MSM-friendly  
18 HIV services, such as HIV testing and counselling, condom/lubrication provision, HIV  
19 care and treatment, which would contribute to slowing the pace of HIV infections  
20 among this high risk group. For example, given that HIV diagnosis often leads to safer  
21 sexual practices, according to the findings of an original study by Nguyen and  
22 Kiethly<sup>[2022]</sup> among People Living with HIV (PHIV) in Vietnam, testing and  
23 counselling services need to be expanded and segmented based on the needs of each  
24 high risk group in order to increase HIV testing uptake.  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39

40 | Findings from this review [also](#) suggest the need to identify and appropriately address  
41 the socio-cultural and economic aspects that influence HIV infection among  
42 MSM.<sup>[2123]</sup> Currently, MSM continue to report not being treated equally when they  
43 present themselves to public service providers, such as health clinics, schools, or public  
44 administration offices. Stigma continues to be a significant barrier to accessing basic  
45 and necessary services.<sup>[2224]</sup> Awareness raising campaigns should also be segmented  
46 for greater effectiveness, with the delivery of directed information and messaging to  
47 families, government entities, and the Vietnamese population.  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

A limitation of the study design includes the omission of literature published in languages other than English; however, efforts were made to contact MSM experts and practitioners in Vietnam to ensure review's inclusiveness and breadth. Another limitation of the study design is that it included abstraction of both behavioural and biological data sets, and therefore the application of PRISMA had to be combined with the ePPI Quality and Relevance appraisal framework in order to ensure appropriate scoring methodology for diverse studies. A key strength of this review is its inclusion of behavioural data sets, as these provide insight on the rapid rise of HIV prevalence among MSM in Vietnam.

#### **ACKNOWLEDGEMENTS**

Accurate data can be challenging to generate and disseminate in Vietnam. However, the UNAIDS/Vietnam country office and the PEPFAR/Vietnam team have diligently worked with the Government of Vietnam to improve surveillance, MARP mapping and estimates and projections. I would like to thank Christopher Fontaine at UNAIDS/Vietnam and Dr Nguyen Cuong Quoc at FHI/Vietnam for their valuable expertise and timely provision of difficult-to-access data and documentation on MSM in Vietnam.

#### **CONFLICT OF INTEREST DISCLOSURE STATEMENT**

None of the authors of the above manuscript has declared any conflict of interest within the last three years which may arise from being named as an author on this manuscript.

#### **SOURCES OF SUPPORT**

This study was funded in part by Flinders University post-graduate grants and independent funding.

## CONTRIBUTORSHIP

MCG designed data extraction tools, extracted data, analysed and scored data, and drafted and revised the paper. She is guarantor. SBM scored and validated the extracted data, contributed to article revisions, and provided final approval of the version to be published. PW provided study design, contributed to article revisions, and provided final approval of the version to be published.

## DATA SHARING

Abstraction dataset available from the corresponding author at  
~~<macarena.c.garcia@gmail.com>. There is no additional data available.~~

**Formatted:** Font: (Default) Times New Roman, 12 pt

**Formatted:** Font: (Default) Times New Roman, 12 pt, No underline

**Formatted:** Font: (Default) Times New Roman, 12 pt, No underline

## REFERENCES

1 Vietnam Administration for AIDS Control and Prevention. *Vietnam HIV/AIDS Estimates and Projections, 2007-2012*. Hanoi, Vietnam: Vietnam Ministry of Health 2009.

2 United Nations Joint Programme for HIV/AIDS. *Vietnam – Facts and Figures*. UNAIDS/Vietnam 2008. Retrieved 7 October 2009 from [unaids.org.vn](http://unaids.org.vn).

**Formatted:** Font: Italic

3 Barald S, Sifakis F, Cleghorn F, et al. Elevated risk for HIV Infection among men who have sex with men in low- and middle-income countries 2000–2006: A Systematic Review. *PLoS Med* 2007;4:e339.

**Formatted:** No underline, Font color: Auto, Spanish (Argentina)

**Formatted:** Spanish (Argentina)

1  
2  
3  
4  
5  
6  
7  
8 42 van Griensven F, van Wijngaardenc JW, Barald S, et al. The global epidemic of  
9 HIV infection among men who have sex with men. *Curr Opin HIV AIDS* 2009;4:  
10 300–307.  
11  
12

13  
14  
15  
16 53 Nguyen AT, Tran VH. HIV/STI Integrated Biological and Behavioral Surveillance  
17 in Vietnam (IBBS), 2009 (Round 2). *4th National Scientific Conference on*  
18 *HIV/AIDS; 1-2 December 2009, Hanoi, Vietnam*. Hanoi: National Institute of  
19 Hygiene and Epidemiology (NIHE) and Vietnam Administration for HIV/AIDS  
20 Control (VAAC), Ministry of Health; 2010.  
21  
22  
23  
24  
25

26  
27  
28 46 Franklin, B. *The risk of AIDS in Vietnam: An Audience Analysis of Urban Men and*  
29 *Sex Workers, with Guidelines for Prevention*. Hanoi: CARE International in  
30 Vietnam 1993.  
31  
32  
33

34  
35  
36 57 Colby D, Cao NH, Doussantousse S. Men who have sex with men and HIV in  
37 Vietnam: a review. (Special issue: HIV prevention for Asian and Pacific Islander  
38 men who have sex with men: Identifying needs for the Asia Pacific Region.). *AIDS*  
39 *Educ Prev* 2004;16:45–54.  
40  
41  
42  
43  
44

45  
46 68 ePPI Centre. *Quality and relevance appraisal framework for systematic reviews*.  
47 *London2011*. <http://eppi.ioe.ac.uk/> (accessed 4 December 2011).  
48  
49  
50

51  
52 79 Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA Statement for reporting  
53 systematic reviews and meta-analyses of studies that evaluate health care  
54  
55

Formatted: No underline, Font color: Auto,  
Spanish (Argentina)

1  
2  
3  
4  
5  
6 interventions: explanation and elaboration. *PLoS Med* 2009;6:1–28.

7  
8  
9  
10 ~~8~~<sup>10</sup> Socialist Republic of Vietnam. *UNGASS Country Progress Report*. Hanoi,  
11 Vietnam: United Nations 2010.

12  
13  
14  
15  
16 ~~9~~ ~~Vietnam Administration for AIDS Control and Prevention. *Vietnam HIV/AIDS*~~  
17 ~~*Estimates and Projections, 2007-2012*. Hanoi, Vietnam: Vietnam Ministry of~~  
18 ~~Health 2009.~~

19  
20  
21  
22  
23  
24 ~~10~~<sup>11</sup> Fontaine C. Policy environment and MSM in Vietnam. Personal  
25 communication. (Garcia MC, Hanoi: 2011).

26  
27  
28  
29  
30 ~~11~~<sup>12</sup> Vietnam Ministry of Health. *Results from the HIV/STI Integrated Biological and*  
31 *Behavioral Surveillance (IBBS) in Vietnam, 2005-2006*. Hanoi: Ministry of Health  
32 2006.

33  
34  
35  
36  
37  
38 ~~12~~<sup>13</sup> Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh  
39 City. (Unpublished).

40  
41  
42  
43  
44 ~~13~~<sup>14</sup> Le MG, Clatts M. *Men selling sex to other men in Hanoi: findings from an*  
45 *ethno-epidemiological study*. Hanoi: UNAIDS; 2009. [www.unaids.org.vn](http://www.unaids.org.vn)  
46 (accessed 13 December 2011).

47  
48  
49  
50  
51  
52 ~~14~~<sup>15</sup> Colby D, Minh TT, Toan TT. Down on the farm: homosexual behaviour, HIV  
53 risk and HIV prevalence in rural communities in Khanh Hoa province, Vietnam.



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

*Sex Transm Infect* 2008;**84**:439–443.

~~16~~16 Nguyen Q, Schoenbach VJ, Le B, et al. HIV risk behaviors of Vietnamese men who have sex with men: results of a national online survey. In: *The 7th Vietnamese Education Foundation Fellows and Scholars Conference; 3-5 January 2010*; New York: Rensselaer Polytechnic Institute 2010.

~~17~~17 Colby D, Mimiaga M. Results of research on male sex workers in Ho Chih Minh City. (Unpublished).

~~18~~18 Nguyen CQ. HIV epidemic among men who have sex with men in Ho Chi Minh City. (Unpublished).

~~19~~19 Lowe D, Thien P. *Rapid situation and response assessment of HIV and AIDS programs for men who have sex with men in Vietnam. DRAFT REPORT*. Hanoi, Vietnam: Vietnam Ministry of Health - Vietnam Administration for AIDS Control and Prevention (VAAC) 2010.

~~20~~20 Ho Chi Minh City Provincial AIDS Committee. The HIV epidemic in Ho Chi Minh City: Where is it going? Ho Chi Minh City, Vietnam: USAID 2006.

21 Holtgrave D, McGuire J. Impact of Counselling in Voluntary Counselling and Testing Programs for Persons at Risk for or Living with HIV Infection. *Clinical Infectious Diseases*. 2007; 44(3): 360-363.

Formatted: No underline, Font color: Auto, Spanish (Argentina)

1  
2  
3  
4  
5  
6 | 2022 Nguyen NT, Keithly SC. A qualitative study on the sexual behaviour of people  
7 living with HIV in Vietnam. *AIDS Care* Published Online First: 24 January 2012.  
8  
9 doi:10.1080/09540121.2011.644230  
10

11  
12  
13  
14 | 2123 Clatts MC, Giang LM, Goldsamt LA, et al. Male sex work and HIV risk among  
15 young heroin users in Hanoi, Vietnam. *Sex Health* 2007;4:261–267.  
16  
17

18  
19  
20 | 2224 Tran TN, Le TMP, Nguyen TV. *RESEARCH REPORT: MSM in Vietnam -*  
21 *social stigma and consequences*. Hanoi, Vietnam: STDs/HIV/AIDS Prevention  
22 Center (SHAPC) 2009.  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

Formatted: No underline, Font color: Auto, Spanish (Argentina)

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

**Figure Legend**

**Figure 1: Literature search flow diagram<sup>[79]</sup>**

For peer review only

## PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
<b>TITLE</b>			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Cover
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2, 3
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3, 4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3, 4
<b>METHODS</b>			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	N/A
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4, 5
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4, 5
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4, 5
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4, 5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5 - 7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5 - 7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	N/A
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$ for each meta-analysis).	N/A

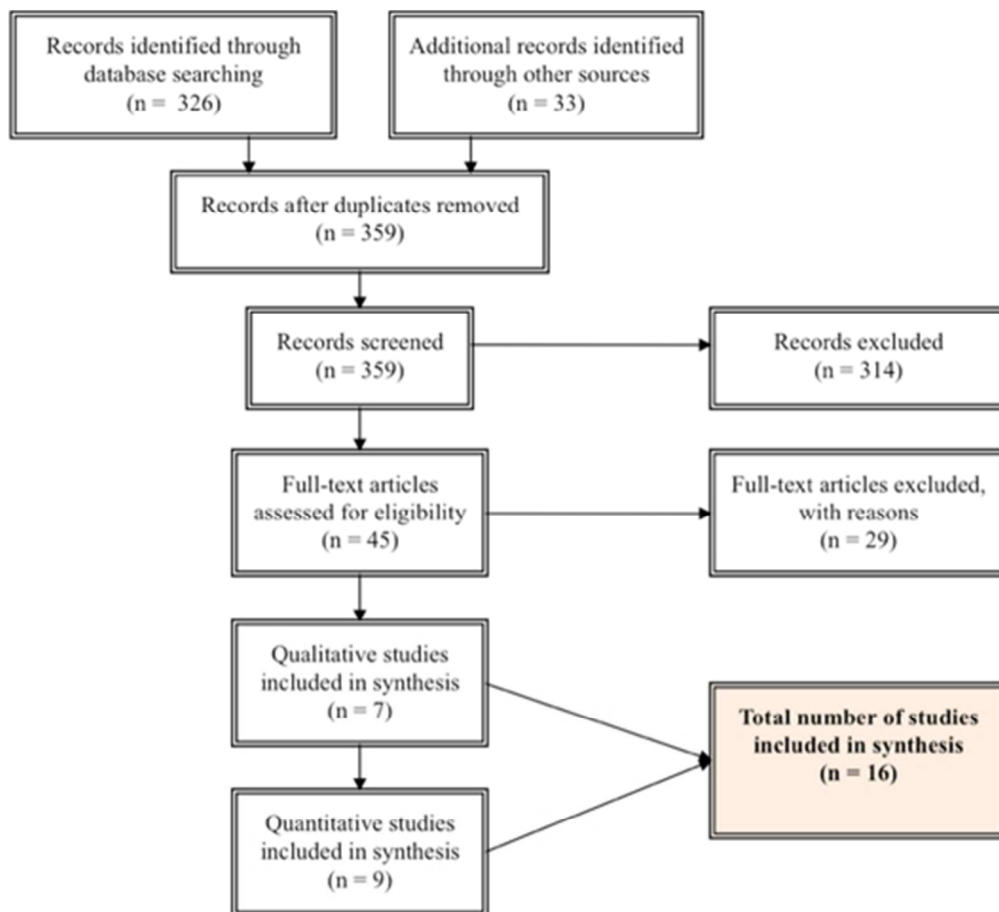
For peer review only - <http://bmjopen.bmj.com/site/about/guidelines.xhtml>

# PRISMA 2009 Checklist

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	7
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	7
<b>RESULTS</b>			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	5 - 7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	N/A
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	14 - 15
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	5 - 7
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
<b>DISCUSSION</b>			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	8 - 17
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	5 - 7
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	8 - 17
<b>FUNDING</b>			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	17

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097



44x40mm (300 x 300 DPI)

only

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 **Elevated HIV prevalence and risk behaviours among men who have sex with men (MSM)**  
4  
5 **in Vietnam: a systematic review**  
6  
7

8 Macarena C García, MA ; Samantha B Meyer, PhD; Paul Ward, PhD  
9  
10

11  
12  
13 **ARTICLE SUMMARY**  
14

15 **Article Focus:**  
16

- 17
- 18 • Rapidly rising prevalence rates among men who have sex with men (MSM) in Vietnam  
19 draws concern from the region and the world. Multiple epidemiological and behavioural  
20 studies have addressed HIV prevalence and risk behaviours among MSM in Vietnam, the  
21 first study dating back to 1993.  
22  
23
  - 24 • The current study will review and analyze original studies on HIV prevalence and risk  
25 behaviours among men who have sex with men (MSM) in Vietnam.  
26  
27

28  
29  
30  
31  
32 **Key Messages:**  
33

- 34
- 35 • Although a systematic review of research on Vietnamese MSM and HIV epidemiology  
36 was published in 2004, the results presented only include original studies conducted up to  
37 2001. Since that time, over a dozen studies on MSM in Vietnam have been conducted  
38 and are the topic of this review.  
39
  - 40 • This work starts off where the previous systematic review left off. It finds that the  
41 majority of study findings published and/or presented at national/international  
42 conferences reveal rapidly increasing rates of HIV infection and an alarming shift in HIV  
43 epidemiology among this high-risk population in Vietnam within the last decade.  
44  
45
  - 46 • This work highlights the need for large scale targeted and MSM-friendly prevention  
47 interventions for MSM in Vietnam to address the risks posed by low consistent condom  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2  
3 use; low lubrication use; high levels of unprotected anal intercourse; and multiple and  
4  
5 concurrent sexual partnerships.  
6  
7

### 8 **Strengths and Limitations**

- 9
- 10 • The current study design employed data extraction and validation techniques. Two  
11 academics validated and independently scored the data throughout this systematic  
12 literature review. The researchers addressed and resolved conflicts in the data.  
13  
14
  - 15 • One limitation of the study included the fact that the researchers were not blinded to the  
16 purpose of the study.  
17  
18
  - 19 • Another limitation includes that only studies published in English were included; studies  
20 published in other languages were omitted.  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60