

# The continuing HIV epidemic among men who have sex with men and transgender women in the ASEAN region: implications for HIV policy and service programming

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**Abstract.** Men who have sex with men (MSM) in Western urban areas have seen substantive decreases in new diagnoses of HIV infection. This paper explores whether such declines are present among MSM and transgender women (TGW) in Southeast Asia and discusses implications for HIV policies and programming. A scoping review was conducted of scientific publications and selected documents regarding the spread of HIV infection among MSM and TGW in major urban centres of the Association of Southeast Asian Nations (ASEAN) region. Continued high HIV prevalence and incidence among MSM are found in integrated behavioural and biological surveillance (IBBS) and research studies. HIV prevalence among MSM under IBBS decreased only in Bangkok from 28.6% in 2014 to 10.3% in 2018, whereas it was increasing in Kuala Lumpur, Ho Chi Minh City, Vientiane, and Phnom Penh. HIV/AIDS case reports regarding new HIV infection diagnoses among MSM have started to decrease in Singapore since 2011 and have been plateauing in Metropolitan Manila since 2017. Where data were available, it was found that HIV prevalence among TGW was high and if IBBS was conducted, it was increasing. HIV prevalence among TGW under IBBS in Jakarta had risen to 34.0% (2015) and 14.0% (2019) in Phnom Penh. These findings suggest that most ASEAN member states have so far failed to effectively implement and scale-up scientifically proven biomedical HIV prevention measures and counter stigma and discrimination that impedes access to appropriate HIV prevention and treatment services for MSM and TGW.

**Keywords:** epidemiology, HIV/AIDS, prevalence, incidence, prevention, men who have sex with men, Southeast Asia, transgender.

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## Introduction

In recent years, impressive declines in reports of new HIV infection diagnoses have been observed among men who have sex with men (MSM) residing in urban areas of the Western world.<sup>1–4</sup> By and large, these population-level reductions have

been attributed to the introduction and scale-up of HIV pre-exposure prophylaxis (HIV PrEP) and antiretroviral treatment (ART) for prevention.<sup>3</sup> HIV PrEP pertains to a daily (or intermittent) oral dose of one or two antiretroviral drugs as chemoprophylaxis against infection, whereas ART for

prevention refers to reduced risk of onward transmission after initiation of ART with a subsequent reduction in HIV viral load. Both approaches have been found efficacious in preventing HIV infection in phase III clinical trials.<sup>5,6</sup> Their successful roll-out among MSM and other key populations in Western countries has led to hopes and speculations about the possibility of eradication of HIV, an example of which is the Joint United Nations Programme on HIV/AIDS (UNAIDS)'s mantra of 'Getting to Zero'.<sup>1,7–10</sup> This refers to a global campaign to achieve zero new HIV infections, zero HIV-related discrimination and zero HIV-related deaths by 2030.<sup>10</sup>

Although results observed among urban MSM in Western countries are encouraging, it is unknown to what degree these apply to the HIV epidemic among MSM and transgender women (TGW) in Southeast Asia. To help answer this question, this paper reviews available HIV epidemiologic data among MSM and TGW residing in major urban centres in Southeast Asia and discusses implications for HIV policy and service programming.

## Methods

We performed a literature scoping review<sup>11</sup> of scientific articles regarding HIV infection among MSM and TGW residing in Southeast Asian major urban centres published from 2010 to 2019. The purpose of a scoping review is to provide an overview of available data without answering a specific research question. As part of the review, PubMed (<https://www.ncbi.nlm.nih.gov/pubmed/>) and Google Scholar (<https://scholar.google.com/>) databases were searched using the following medical subject heading (MeSH) terms: HIV AND (MSM OR men who have sex with men OR transgender OR transgender women AND 'country'). From each of the returned citations, we subsequently derived the geographic location and whether the study assessed HIV prevalence and/or incidence and was conducted among MSM and/or TGW. If HIV prevalence and incidence were reported multiple times from the same study to answer different research questions, the most recent report was selected for evaluation. If systematic municipal-level HIV/AIDS case reporting data were found, these were also included. If publications or case reports presented data collected before 2010, these were included as well.

Because efficacy results of biomedical interventions (HIV PrEP and ART for prevention) became available in 2010, that year was chosen as the lower bound of the publication inclusion period. We also searched the AIDS Data Hub for Asia and the Pacific (<https://www.aidsdatahub.org/>) for results of integrated behavioural and biological HIV surveillance (IBBS) and HIV/AIDS case reporting. In addition, we searched HIV prevention advocacy websites (<https://www.prepwatch.org>) for HIV PrEP guidelines and implementation. Where necessary, we reviewed country reports submitted to UNAIDS,<sup>10</sup> the Global Fund to Fight AIDS, Tuberculosis and Malaria (<https://www.theglobalfund.org/en/publications/>) and the United States President's Emergency Plan for AIDS Relief (<https://www.state.gov/country-operational-plans/>).

We defined Southeast Asia as the 10 member states of the Association of Southeast Asian Nations (ASEAN). As sexual

minorities tend to concentrate in large cities,<sup>12,13</sup> the most populous urban area from each country was selected for inclusion. Selected cities were Bandar Seri Begawan (Brunei Darussalam), Phnom Penh (Cambodia), Jakarta (Indonesia), Vientiane (Lao PDR), Kuala Lumpur (Malaysia), Yangon (Myanmar), Metropolitan Manila (the Philippines), Singapore (Republic of Singapore), Bangkok (Thailand) and Ho Chi Minh City (Vietnam). Because aggregated IBBS data were not available for the entire region of metropolitan Manila, we selected Quezon City, the most populous municipality in the Manila administrative area for inclusion. IBBS data were presented by calendar year to allow inspection of epidemiological trends and to visualise the sequential emergence (or the assessment thereof) of the HIV epidemic among MSM and TGW across countries in the region.

## Results

### Scoping review

Our PubMed and Google Scholar search returned 634 publications using the MeSH terms specified above. Of these, 18 reported HIV prevalence or incidence data among MSM residing in ASEAN major urban centres, five reported such data among TGW and six reported them for both MSM and TGW (see Appendix 1 for details). In addition, we identified eight IBBS reports (four of them reported data for both MSM and TGW, and one for MSM and TGW combined) and two city-specific HIV/AIDS case reporting systems (Appendix 1).

### Men who have sex with men

#### *Estimated HIV prevalence in integrated behavioural and biological surveillance*

Figure 1 depicts HIV prevalence over time among MSM included in IBBS in seven major cities in the region. The first IBBS among MSM was conducted in Bangkok in 2003, where HIV prevalence increased from 17.3% in that year to over 30% in 2007.<sup>14</sup> HIV prevalence remained between 25% and 30% until 2014, after which a decline was observed.<sup>14,15</sup> In 2005, IBBS was started in Ho Chi Minh City (5.8%)<sup>16</sup> and in 2007 in Kuala Lumpur (3.9%),<sup>17,18</sup> Jakarta (8.0%),<sup>19,20</sup> Vientiane (5.6%),<sup>21</sup> and Yangon (23.0%).<sup>22</sup> In 2010, IBBS began in Phnom Penh (3.6%).<sup>23</sup> In 2015, in Quezon City, HIV prevalence was found to be 5.5% in a combined sample of MSM and TGW.<sup>24</sup> During the most recent IBBS cycle, HIV prevalence in Ho Chi Minh City was 29.0% (2018),<sup>16</sup> in Kuala Lumpur 43.3% (2017),<sup>18</sup> in Jakarta 28.1% (2019) (slightly down from 32.0% in 2015),<sup>20</sup> and in Bangkok 10.3% (2018),<sup>25</sup> in Vientiane 7.0% (2017)<sup>26</sup> and in Yangon 27.0% (2015).<sup>22</sup> In Phnom Penh, it was 6.1% (2019).<sup>23</sup> In Quezon City, it was 12.0% (2018) in the mixed sample of TGW and MSM, which is more than double the prevalence found in 2015.<sup>27</sup> No data were found from Brunei.

#### *HIV/AIDS case reports*

Two of the 10 ASEAN countries have well-established, municipal-level HIV/AIDS case reporting systems: Singapore and the Philippines. In Singapore, the yearly reported number

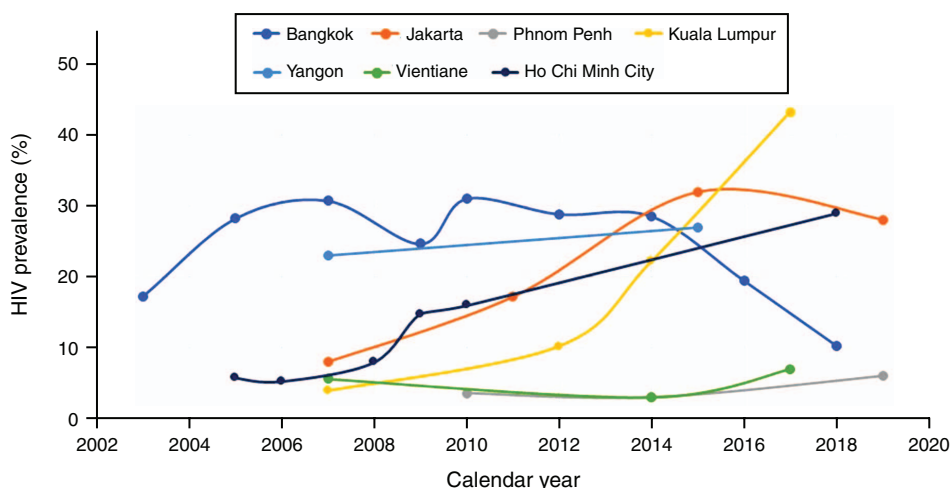


Fig. 1. HIV prevalence among men who have sex with men in integrated behavioural and biological HIV surveillance in Southeast Asian urban centres, 2003–19.

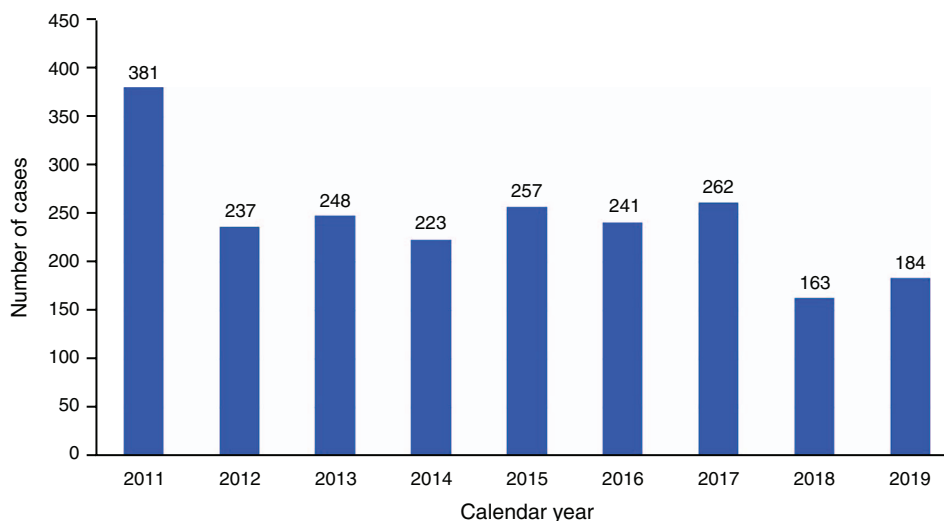


Fig. 2. Yearly reported newly diagnosed HIV/AIDS cases among men who have sex with men Singapore, 2011–19.

of newly diagnosed HIV/AIDS cases among MSM decreased from 381 in 2011 to 184 in 2019 (Fig. 2). During the period 1985–2010, the total number of reported cases among MSM in Singapore was 1674 (before 2011 only grouped data were available).<sup>28</sup>

Figure 3 shows the number of yearly reported new diagnosed HIV/AIDS cases over time in Metropolitan Manila. Following incremental annual increases from 1984 to 2008, the number started to strongly increase from 397 in 2009 to 660 in 2010. Since then, the number of new cases approximately doubled every two to three years until 2016, when 3323 cases were reported. And since then, the number has started to level off at ~3500 cases per year.<sup>29</sup>

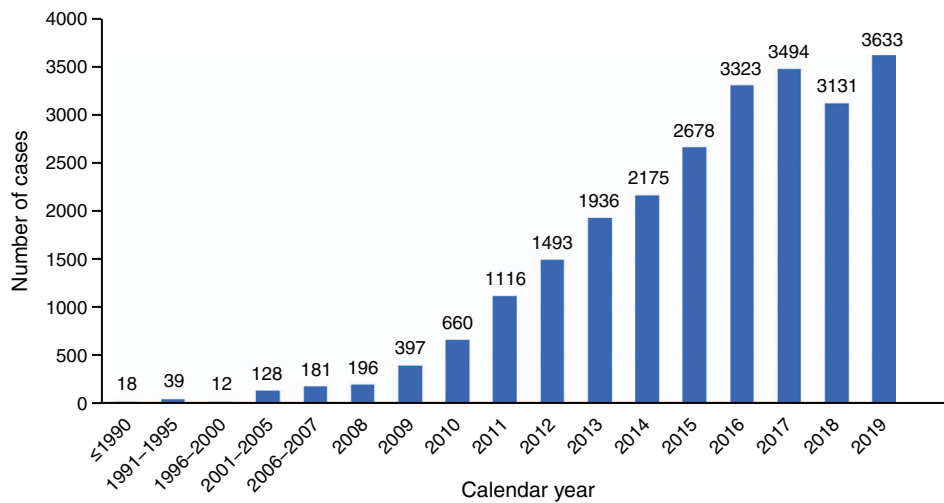
*Estimated HIV prevalence in cross-sectional studies*

Most cross-sectional HIV prevalence studies among MSM in the region have been conducted in Bangkok. In these

studies (Table 1), estimated HIV prevalence ranged from 15.9% to 28.3%.<sup>30–37</sup> In Yangon, 15.5% of MSM tested positive in a 2016 study.<sup>38</sup> Older investigations were found from Metro Manila, where the HIV prevalence among MSM was 11.5% during 2009–10<sup>39</sup> and from Ho Chi Minh City, where it was 14.8%, also during 2009–10<sup>40</sup> (Table 1).

*HIV incidence*

HIV incidence data among MSM in the region are scarce. Most HIV incidence estimates are derived from studies among MSM in Bangkok, where they varied from 2.0 to 7.1 per 100 person-years (PY) of follow up (Table 2).<sup>30,32,35,37,41</sup> In Myanmar, a recent study among MSM at HIV testing centres in two cities found HIV incidence among repeating HIV testers was high, at 10.1 per 100 PY.<sup>38</sup>



**Fig. 3.** Yearly reported newly diagnosed HIV/AIDS cases among men who have sex with men Metropolitan Manila, 1990–2019.

**Table 1.** HIV prevalence among men who have sex with men in major urban centres in Southeast Asia  
For reasons of consistency across studies, all 95% confidence intervals (CI) were recalculated using the Mid-P Exact method for proportions (available from <https://www.openepi.com/>)

Year	HIV prevalence (%)	n/N	95% CI	Reference
<b>Bangkok, Thailand</b>				
2015–18	20.5	108/527	17.2, 24.1	Ongwandee <i>et al.</i> 2018 <sup>30</sup>
2015–16	21.4	176/824	18.7, 24.3	Seekaew <i>et al.</i> 2018 <sup>31</sup>
2011–16	21.6	317/1465	19.6, 23.8	Wasantioopapokakorn <i>et al.</i> 2018 <sup>32</sup>
2014–15	22.4	112/499	19.0, 26.3	Sapsirisavat <i>et al.</i> 2016 <sup>33</sup>
2012–13	15.9	69/363	15.2, 23.3	Maek-a-nantawat <i>et al.</i> 2014 <sup>34</sup>
2006–12	21.3	372/1744	19.5, 23.3	Piyaraj <i>et al.</i> 2018 <sup>35</sup>
2005–11	28.3	1243/4398	27.0, 29.6	Ananworanich <i>et al.</i> 2013 <sup>36</sup>
2008–09	20.0	54/270	15.6, 25.1	Phanuphak <i>et al.</i> 2015 <sup>37</sup>
<b>Yangon, Myanmar</b>				
2016	15.5	198/1280	13.6, 17.5	Veronese <i>et al.</i> 2020 <sup>38</sup>
<b>Metropolitan Manila, the Philippines</b>				
2009–10	11.8	48/406	8.9, 15.2	Ganguangco <i>et al.</i> 2013 <sup>39</sup>
<b>Ho Chi Minh City, Vietnam</b>				
2009–10	14.8	59/397	11.6, 18.6	Le <i>et al.</i> 2016 <sup>40</sup>

*Transgender women*

*Estimated HIV prevalence in integrated behavioural and biological surveillance*

Figure 4 depicts HIV prevalence estimates over time among TGW included in IBBS in four major cities in the region. No IBBS data specifically for TGW could be found for Brunei Darussalam, Ho Chi Minh City, Metropolitan Manila, Singapore, Vientiane, and Yangon. The first IBBS among TGW was conducted in Bangkok in 2005, where HIV prevalence was 11.5%. By 2018, this had increased to 17.3%.<sup>15,25</sup> In 2007, IBBS among TGW was started in Jakarta, where HIV prevalence was 34.0%.<sup>20</sup> In 2011 and 2015, this percentage did not significantly change.<sup>20</sup> TGW were first enrolled in IBBS as a separate category in Phnom Penh in

2012; HIV prevalence at that time was 5.8%.<sup>42</sup> In 2016, it was 6.5%,<sup>43,44</sup> after which it more than doubled to 14.0% in 2019.<sup>23</sup> Beginning in 2015, TGW were also included in IBBS as a separate category in Kuala Lumpur, with HIV prevalence being 19.3% in 2014, which increased to 23.9% in 2017.<sup>18</sup>

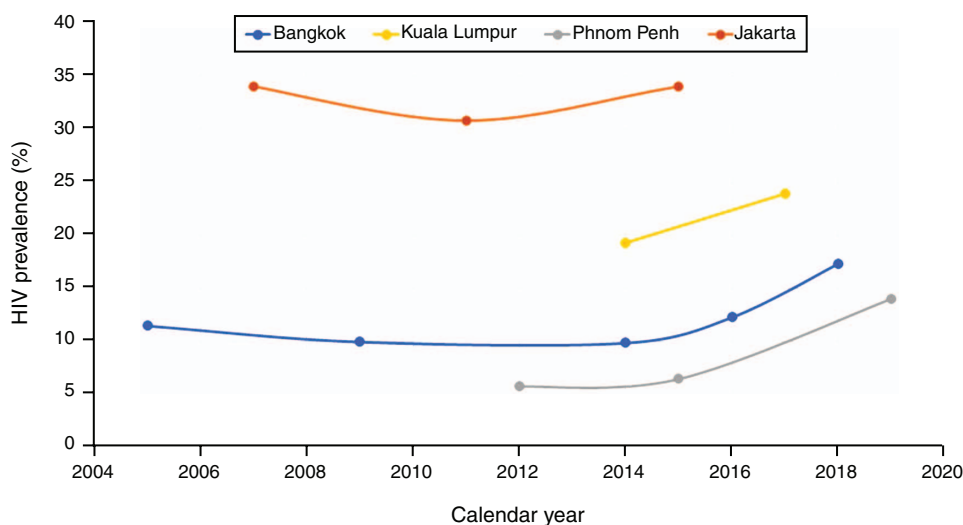
*Estimated HIV prevalence in cross-sectional studies*

Most cross-sectional HIV prevalence studies among TGW in the region have been conducted in Bangkok, Thailand. In these studies (Table 3), HIV prevalence ranged from 7.3% between 2012 and 2013 to 12.2% between 2011 and 2016.<sup>30–32</sup> HIV prevalence among TGW in a study from Kuala Lumpur in 2014 was 12.4%,<sup>45</sup> in Ho Chi Minh City in 2015, it was 17.7%<sup>46</sup> and in Yangon in 2016, 19.2%<sup>38</sup> (Table 3).

**Table 2. HIV incidence among men who have sex with men in major urban centres in Southeast Asia**  
For reasons of consistency across studies, all 95% confidence intervals (CI) were recalculated using the Mid-P Exact method for proportions (available from <https://www.openepi.com/>). PY, person years

Year	HIV incidence per 100 PY	n/PY	95% CI	Reference
Bangkok, Thailand				
2015–18	4.2	7/167	1.9, 8.1	Ongwandee <i>et al.</i> 2018 <sup>30</sup>
2011–16	7.1	30/422	4.9, 10.0	Wasantioopapokakorn <i>et al.</i> 2018 <sup>32</sup>
2005–15	4.9	347/7147	4.4, 5.4	Holtz <i>et al.</i> 2019 <sup>41</sup>
2006–12	6.0	212/3554	5.2, 6.8	Piyaraj <i>et al.</i> 2018 <sup>35</sup>
2008–09	2.0	2/103	0.3, 6.3	Phanuphak <i>et al.</i> 2015 <sup>37</sup>
Yangon, Myanmar				
2016	10.1 <sup>A</sup>	12/119	5.6, 16.9	Veronese <i>et al.</i> 2020 <sup>38</sup>

<sup>A</sup>HIV incidence in this study also included TGW and MSM enrolled from Mandalay. None of the TGW and only a few MSM from Mandalay seroconverted in this study.



**Fig. 4.** HIV prevalence among transgender women in integrated biological and behavioural surveillance in Southeast Asian urban centres, 2005–19.

#### Estimated HIV incidence

HIV incidence data among TGW are scarce. Only two reports were identified; both were from Bangkok. In one study, the HIV incidence was 10.5 per 100 PY from 2011 to 2016<sup>32</sup> and in the other, no new HIV infections were detected from 2015 to 2018.<sup>30</sup> It should be noted that in both studies the number of PY was low (Table 4).

#### Discussion

Whereas consistent population-based decreases in HIV/AIDS case reports have been observed among MSM residing in urban areas of the Western world,<sup>1–4,7–9</sup> no such pattern emerged from our review of the HIV epidemiology among MSM in Southeast Asia. Although a decrease in HIV prevalence was found among MSM in Bangkok, prevalence in the other cities was stable or increasing. Prevalence among MSM included in IBBS varied widely; the highest being

43.3% in Kuala Lumpur (2017)<sup>18</sup> and the lowest being 3.6% in Phnom Penh (2014).<sup>23</sup> In countries with HIV/AIDS case reporting, new diagnoses among MSM started to decline in Singapore since 2017<sup>28</sup> and have begun to plateau in Metropolitan Manila since 2016.<sup>29</sup> Whether the latter is a sign of a future decrease remains to be seen.

In the few cities for which data were available, HIV prevalence among TGW was high and if IBBS was conducted, it was increasing. By 2015, HIV prevalence among TGW under IBBS in Jakarta had risen to 34.0%<sup>20</sup> and in 2019 in Phnom Penh to 14.0%.<sup>23</sup>

Noteworthy was the difference between MSM and TGW in the number of HIV data sources and in the number of cities with such information. This difference shows the dearth of information about the spread of HIV infection in transgender populations across the region. New HIV diagnoses among TGW are usually not presented as a separate reporting category, instead these are commonly merged with MSM<sup>47</sup>



**Table 3. HIV prevalence among transgender women in major urban centres in Southeast Asia**  
For reasons of consistency across studies, all 95% confidence intervals (CI) were recalculated using the Mid-P Exact method for proportions (available from <https://www.openepi.com/>)

Year	HIV prevalence (%)	n/N	95% CI	Reference
Bangkok, Thailand				
2015–18	7.3	9/123	3.6, 13.0	Ongwadee <i>et al.</i> 2018 <sup>30</sup>
2015–16	9.9	12/121	5.5, 16.3	Seekaew <i>et al.</i> 2018 <sup>31</sup>
2011–16	12.7	10/79	6.6, 21.4	Wasantioopapokakorn <i>et al.</i> 2018 <sup>32</sup>
Kuala Lumpur, Malaysia				
2014	12.4	24/193	8.3, 17.7	Wickersham <i>et al.</i> 2017 <sup>45</sup>
Yangon, Myanmar				
2016	19.2 <sup>A</sup>	41/214	14.3, 24.9	Veronese <i>et al.</i> 2020 <sup>38</sup>
Ho Chi Minh City, Vietnam				
2015	17.7	37/205	13.2, 23.8	Colby <i>et al.</i> 2016 <sup>46</sup>

<sup>A</sup>In the original report of this study, HIV prevalence among TGW was not broken down between those enrolled from Yangon and Mandalay.

**Table 4. HIV incidence among transgender in major urban centres in Southeast Asia**  
CI, confidence interval; NA, not available; PY, person years

Year	HIV incidence per 100 PY	n/N	95% CI	Reference
Bangkok, Thailand				
2015–18	0	0/43.8	NA	Ongwadee <i>et al.</i> 2018 <sup>30</sup>
2011–16	10.5	1/9.5	0.3, 58.6	Wasantioopapokakorn <i>et al.</i> 2018 <sup>32</sup>

or not reported due to low numbers.<sup>2</sup> Therefore, comparisons of HIV trends among TGW living in Southeast Asian cities was difficult.

Southeast Asian countries were relatively quick in embracing ART for prevention as a blanket strategy to reduce onward HIV transmission among MSM and TGW, although disparities in access to ART among key populations in comparison to the general population persist.<sup>48</sup> In contrast, the adoption of HIV PrEP has been relatively slow.<sup>49,50</sup> This situation started to change by the middle of the past decade, after insights developed that ART for prevention alone would be insufficient to control the HIV epidemic among MSM.<sup>50–52</sup> Thailand was the first country in the region to include HIV PrEP for key populations as a priority in its National AIDS Strategic Plan in 2014.<sup>53</sup> Within the framework of this plan, several implementation and demonstration projects among MSM and TGW were initiated, mostly in community-based and key population-led clinics.<sup>53,54</sup> These initiatives were followed by gradual expansion and preparation for nation-wide scale-up under the country's Public Health Insurance Scheme.<sup>55</sup> Currently, it is estimated that some 13 000 to 14 000 MSM and TGW have been or are using HIV PrEP in Thailand, the majority of them in Metropolitan Bangkok.<sup>55</sup> In 2015, the population size of MSM in Metropolitan Bangkok was estimated to be between 120 000 to 250 000, of which approximately one-third or 40 000 to 83 000 were deemed to need HIV PrEP.<sup>56</sup> These data suggest that the uptake among MSM in the Thai capital

who need HIV PrEP may already be exceeding 25%, which, in combination with other interventions such as ART for prevention and mitigation of stigma and discrimination, may to a large degree explain the downward trajectory of the HIV epidemic in MSM in Bangkok compared with the other cities reviewed in this paper.

Other countries in the region followed suit, with Vietnam announcing national scale-up of HIV PrEP in 2018 under its National AIDS Strategic Plan for 2018–22<sup>57</sup> and Cambodia in 2019 as part of its determination to achieve eradication of HIV infection from the country by 2025.<sup>58</sup> HIV PrEP demonstration projects targeting MSM and TGW have been successfully completed in the Philippines and Malaysia and are ongoing and planned in Lao PDR and Myanmar, respectively.<sup>50</sup> However, the number of MSM and TGW included in these efforts has generally been too low (typically 200 to 300) to make a dent in the number of new HIV infections in these cities, and despite high levels of PrEP willingness and acceptability,<sup>49,59,60</sup> national scaling efforts have been hampered by a lack of government support in these countries. No national HIV PrEP policies or implementation initiatives for MSM and TGW were found for Indonesia and Brunei Darussalam. This is particularly concerning for Indonesia because this is the most populous country in the region (268 million) and has some of the highest HIV prevalence levels among MSM and TGW seen around Southeast Asia.

A key additional factor in hampering access to PrEP and other HIV services is the pervasive societal stigma and

discrimination of MSM and TGW that persists in many countries in the region, even in relatively open-minded cities like Bangkok.<sup>61</sup> Several countries in the region criminalise homosexuality or transgender expression and, in some situations, actively persecute and penalise MSM and TGW.<sup>62,63</sup> Stigma, discrimination and criminalisation compromise access to HIV prevention and treatment services and are key factors in explaining the persistently high HIV prevalence levels among MSM and TGW.<sup>64</sup>

Two years after the World Health Organization (WHO) recommended PrEP for people at substantial risk for HIV in 2015,<sup>65</sup> it issued a detailed set of guidelines on how to expand PrEP access.<sup>66</sup> In 2019, the WHO also recommend the '2+1+1' intermittent/event-related regimen for PrEP implementation besides the daily regimen.<sup>67</sup> This evidence-based decision, which will make PrEP more acceptable for large groups of MSM and TGW in need of PrEP, has yet to be taken on board by several countries in the region.

This paper has several limitations. First, IBBS and cross-sectional studies are, for various reasons, known to suffer from selection bias as they typically target individuals present at 'hotspots' who are likely to be at greater risk; only enrolling those who are willing to participate and often use convenience sampling approaches. For the two countries with HIV notification systems, a limitation is that it cannot be known whether new HIV diagnoses reflect actual incidence or whether they are merely a consequence of increased disease and HIV testing rates among MSM. Another limitation is that the sample sizes of some studies (particularly among TGW) were quite small, which limits the generalisability of the findings. Also, for TGW, limited data points were found, which made discerning epidemiologic trends challenging, if not impossible.

In conclusion, although some signs of decreasing HIV prevalence and reports of new HIV infections were seen among MSM in a few cities across the region, the overall development is negative and lags that seen in the Western world. Few data were found for TGW, but if available, HIV prevalence was increasing. Unless HIV PrEP and ART for prevention for MSM and TGW in Southeast Asia are rapidly brought to scale and barriers in accessing these services are removed, global disparities in the control of HIV/AIDS among MSM and TG will persist.

### Conflicts of interest

N. Phanuphak is a Joint Editor of *Sexual Health* but was blinded from the peer-review process for this paper. The remaining authors declare that they have no conflicts of interest.

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**Appendix 1. Scoping review results from searching PubMed and Google Scholar databases and internet searches of government and non-government organisation websites**

MSM, men who have sex with men; TGW, transgender women; PDR, People's Democratic Republic

Country	Literature search		Relevant publications		(Non)-government reports or websites <sup>B</sup>	
	Total number of references	Irrelevant <sup>A</sup>	MSM	TGW	MSM	TGW
Brunei Darussalam	0	0	0	0	0	0
Cambodia	21	18	0	3	1	1 <sup>C</sup>
Indonesia	47	46	1	0	1	1 <sup>C</sup>
Lao PDR	4	3	1	0	0	0
Malaysia	64	62	1	1	1	1 <sup>C</sup>
Myanmar	24	23	1	1 <sup>C</sup>	1	0
Philippines	40	39	1	0	2	0
Thailand	286	275	11	5 <sup>C</sup>	1	1 <sup>C</sup>
Singapore	46	46	0	0	1	0
Vietnam	102	99	2	1	1	0
Total	634	611	18	11 <sup>D</sup>	9	4 <sup>D</sup>

<sup>A</sup>Publications were deemed irrelevant if they did not concern MSM and or TGW residing in one of the designated urban areas or did not present any HIV prevalence or incidence data.

<sup>B</sup>For these searches, no denominator data are available.

<sup>C</sup>Publication not unique, included data for both MSM and TGW.

<sup>D</sup>Totals include non-unique publications reporting data for both MSM and TGW.