

**Pre-exposure Prophylaxis (PrEP) Acceptance among Men Who
Have Sex with Men (MSM) and Transgender Women (TGW) in
Malaysia: An Analysis from the Integrated Biological and
Behavioural Surveillance (IBBS) Survey 2022**

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ABSTRACT

Background: The pre-emptive use of antiretroviral drugs, known as pre-exposure prophylaxis (PrEP), reduces the risk of contracting HIV if exposed to the virus. The aim of this study was to assess the acceptance of PrEP among MSM and TGW in Malaysia.

Methods: Respondent driven sampling (RDS) was used to recruit MSM and TGW from July to December 2022. This study comprised of two components. The first component was behavioural survey, conducted using a self-administered online questionnaire through a web-based platform. The second component was the biological component where respondents were instructed to attend the community-based testing sites of their choosing for HIV blood testing after completing the online survey. Statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS 26.0) software.

Results: Overall, 957 MSM and 504 TGW participated in the study. A total of 78.6% of MSM and 49.4% of TGW had heard about PrEP. A higher percentage of MSM (11.8%) reported using PrEP in the past 12 months, compared to 8.0% TGW. Among respondents, more MSM (57.6%) were interested in taking PrEP in the future than TGW (29.3%). Most respondents (72.5% MSM and 94.0% TGW) prefer condom over PrEP as HIV prevention.

Conclusion: In Malaysia, MSM and TGW still have a low level of acceptance for PrEP. Thus, more initiatives are needed to raise awareness about taking PrEP as a preventive measure.

Keywords: Human immunodeficiency virus (HIV), pre-exposure prophylaxis (PrEP), integrated biological and behavioural surveillance (IBBS), men who have sex with men (MSM), transgender women (TGW)

INTRODUCTION

In Malaysia, the total number of new human immunodeficiency virus (HIV) infections has steadily decreased over time, and a large part of this decline can be attributed to the decline in HIV infections brought on by injecting drug use. It is now feared that the shift in HIV infection trends in Malaysia from primarily injecting drug use to sexual transmission will result in a resurgence of the HIV epidemic in the near future.¹

In view of the increasing trend of sexual transmission, the Malaysia's National Strategic Plan to End AIDS (2016-2030) indicated the need to consider PrEP for prevention in specific key populations. MSM and TGW are anticipated to become the main key populations involved in this sexual transmission. Based on the IBBS 2022 findings, HIV prevalence among MSM was 12.9% and 5.9% among TGW.

PrEP is a chemoprophylaxis evidence-based method to prevent HIV infection. The US Food and Drug Administration (FDA) authorised Truvada, a fixed-dose combination of emtricitabine and tenofovir, as an oral PrEP drug in 2012. In October 2019, the FDA approved Descovy, a second oral PrEP medication that contains a fixed dose combination of emtricitabine and tenofovir alafenamide.² The long-acting injectable variant of PrEP, cabotegravir, was then unveiled. This long-acting injectable PrEP formulation improves PrEP uptake, and adherence for those who prefer not to take a daily pill or have difficulty doing so including those related to sexual partner disapproval or pressure.³ The outcomes of trials have shown that PrEP is a useful HIV prevention approach.

Despite its effectiveness, PrEP acceptability is likely to have a significant impact on the success of this initiative. According to published data, the cost of medication,⁴⁻⁷ fear about sexual disinhibition or risk compensation,^{4-5,8} the inconvenience of taking a daily prescription,⁵ and worries about side effects⁴⁻⁶ are major barriers to the acceptability of PrEP. Thus, this study aimed to assess the acceptance of PrEP among MSM and TGW in Malaysia.

METHODS

Study design

RDS method was used to conduct the IBBS survey in Malaysia between July and December 2022. The IBBS is carried out as a part of surveillance that helps to anticipate the future trajectory of the HIV epidemic by analysing the behaviour of key populations as well as HIV prevalence. This is essential for directing the development of interventions and providing policymakers with reliable data on the effectiveness of interventions and areas that require further attention.

According to the specified inclusion criteria, MSM were enrolled: individual who is biological male, aged 18 years or older, and who had engaged in anal penetrative sex with men at least once in the previous six months. On the contrary, TGW were included based on the specified inclusion criteria: individuals who is biologically male, aged 18 years or above, but with female identity, and had anal penetrative sex at least once in the previous six months. Additional inclusion criteria are able to understand Malay or English language, willing to provide informed consent, and self-reporting a negative or unknown HIV status. Exclusion criteria include unable to understand Malay or English language, member of the IBBS research team, and paid staff of the site organisations.

There were two parts in this study. The first part included a behavioural survey that was conducted using a self-administered online questionnaire survey through a web-based platform. The questionnaire was adapted from Family Health International (FHI) guidelines for repeated behavioural surveys in populations at risk of HIV. It was written in the two main languages of the region, Malay and English. The second part was the biological component. After completing the online survey, respondents were instructed to visit their chosen community-based testing sites for HIV blood testing. Participation in this study was on voluntary basis, and no personal information was asked to maintain anonymity. This study was registered with the Medical Research and Ethics Committee, Ministry of Health, Malaysia.

Variables of interest

To better assess respondents' likelihood of adopting PrEP, related items in the questionnaire were used.

Statistical analysis

The SPSS 26.0 software was used for the statistical analysis. Data was entered, cleaned and checked before data analysis.

RESULTS

Respondents' characteristics

A total of 957 MSM and 504 TGW participated in the study. Regarding socio-demographic characteristics, MSM were younger (median age: 27 (18-63) years) than TGW (median age: 31 (19-72) years). Most respondents were from the Malay ethnic group (MSM: 64.5% and TGW: 60.9%) and identified with the Islamic faith (MSM: 72.7% and TGW: 78.2%). Most MSM had a tertiary education (75.2%), while 75.0% of TGW were educated up to secondary education. The majority of MSM were unmarried (96.1%). A total of 79.4% of MSM asserted having a job, and 38.2% of them identified as professional. The majority of TGW claimed to be employed (94.2%), and 28.4% of them claimed to be sex workers.

Sexual practices and condom use patterns

The sexual practices and condom use patterns of MSM and TGW are described in Table 1. Most TGW (90.7%) admitted to selling anal sex, while majority of MSM (87.3%) reported having consensual anal sex. Compared to TGW, more MSM reported that they had always used condoms during anal sex with different types of sex partners.

Table 1. Sexual practices and condom use patterns

	MSM		TGW	
	n	(%)	n	(%)
Selling anal sex				
Ever had sex with men in exchange for money or in kind	100	(10.4)	457	(90.7)
Frequency of condom used: (N= 100 for MSM; 457 for TGW)				
Always	47	(47.0)	189	(41.4)
Not always	50	(50.0)	267	(58.4)
Never use	3	(3.0)	1	(0.2)
Consensual anal sex				
Ever had sex with men without payment	835	(87.3)	347	(68.8)
Frequency of condom used: (N= 835 for MSM; 347 for TGW)				
Always	432	(51.7)	111	(32.0)
Not always	374	(44.8)	219	(63.1)
Never use	29	(3.5)	17	(4.9)
Paid anal sex				
Ever had sex with men with payment	74	(7.7)	55	(10.9)
Frequency of condom used: (N= 74 for MSM; 55 for TGW)				
Always	40	(54.1)	16	(29.1)
Not always	32	(43.2)	34	(61.8)
Never use	2	(2.7)	5	(9.1)

Future acceptability and potential use of PrEP

As reported in Table 2, 78.6% of MSM and 49.4% of TGW were aware of PrEP. More MSM (11.8%) indicated using PrEP in the past 12 months, compared to 8.0% TGW who claimed to have used it in that time. A total of 55.1% of MSM reported they acquired PrEP from a private clinic, while the majority of TGW (75.0%) obtained it from a pharmacy.

Among MSM, 42.4% of them indicated they had no interest in using PrEP, with not interested in taking PrEP as the main reason (33.8%). On the other hand, 70.7% of TGW stated that they were not interested in taking PrEP, with the main reason being that they were not ready for it (42.0%) and were worried about its side effects (26.5%).

Factors associated with willingness to take PrEP

Table 3 shows the results of the analysis of variables associated with PrEP acceptability. Among MSM, PrEP acceptability was significantly associated with having a history of sexually transmitted infections (STI) symptoms (OR 3.49, $P = 0.007$) versus no history of STI symptoms. Contrary to MSM, age less than 25 years (OR 3.10, $P = 0.003$) versus age 25 years or older was significantly associated with TGW's willingness to use PrEP.

Table 2. Future acceptability and potential use of PrEP

	MSM		TGW	
	n	(%)	n	(%)
Heard about pre-exposure prophylaxis (PrEP) (N= 957 for MSM; 504 for TGW)	752	(78.6)	249	(49.4)
Taken PrEP in the past 12 months (N= 752 for MSM; 249 for TGW)	89	(11.8)	20	(8.0)
Where get PrEP: (N= 89 for MSM; 20 for TGW)				
a) Private clinic	49	(55.1)	3	(15.0)
b) Pharmacy	25	(28.1)	15	(75.0)
c) Online	7	(7.9)	1	(5.0)
d) Others	8	(9.0)	1	(5.0)
Interested in taking PrEP in the future (N= 663 for MSM; 229 for TGW)	382	(57.6)	67	(29.3)
Reason did not interested in taking PrEP in the future: (N= 281 for MSM; 162 for TGW)				
a) Not interested to take PrEP	95	(33.8)	13	(8.0)
b) Financial problem	37	(13.2)	16	(9.9)
c) Too expensive	32	(11.4)	1	(0.6)
d) I am not ready yet for PrEP	53	(18.9)	68	(42.0)
e) Afraid of stigma or rejection	5	(1.8)	0	(0.0)
f) Afraid of the side effects of PrEP	34	(12.1)	43	(26.5)
g) No risk of being infected with HIV	20	(7.1)	17	(10.5)
h) Others	5	(1.8)	4	(2.5)
Prefer as HIV prevention: (N= 957 for MSM; 504 for TGW)				
a) PrEP	263	(27.5)	30	(6.0)
b) Condom	694	(72.5)	474	(94.0)

Table 3. Factors associated with willingness to take PrEP among MSM and TGW

Variables	MSM			TGW		
	Interested in taking PrEP in the future (%)	OR 95% (CI)	P-value	Interested in taking PrEP in the future (%)	OR 95% (CI)	P-value
Age						
≥ 25 years	277/463 (59.8)	1.00		50/196 (25.5)	1.00	
< 25 years	105/200 (52.5)	0.74 (0.53, 1.03)	0.080	17/33 (51.5)	3.10 (1.46, 6.59)	0.003*
Consumed alcohol before or during having sexual intercourse						
No	357/615 (58.0)	1.00		57/182 (31.3)	1.00	
Yes	25/48 (52.1)	0.79 (0.44, 1.42)	0.421	10/47 (21.3)	0.59 (0.28, 1.27)	0.181
Consumed drug before or during having sexual intercourse						
No	348/615 (56.6)	1.00		66/218 (30.3)	1.00	
Yes	34/48 (70.8)	1.86 (0.98, 3.54)	0.058	1/11 (9.1)	0.23 (0.03, 1.84)	0.166
Tested for HIV						
No	38/60 (63.3)	1.00		2/13 (15.4)	1.00	
Yes	344/603 (57.0)	0.77 (0.44, 1.33)	0.348	65/216 (30.1)	2.37 (0.51, 10.98)	0.271
Experienced STI symptoms						
No	355/630 (56.3)	1.00		62/221 (28.1)	1.00	
Yes	27/33 (81.8)	3.49 (1.42, 8.56)	0.007*	5/8 (62.5)	4.27 (0.99, 18.43)	0.051

(CI, confidence interval; OR, odds ratio)

*P < 0.05

DISCUSSION

In this study, most respondents (72.5% MSM and 94.0% TGW) prefer condom over PrEP as HIV prevention. However, consistent condom use was not shown to be gratifying in this study. Inconsistent condoms use during anal sex across different types of sex partners have a significant association with HIV infection among respondents.⁹⁻¹⁰

Comparatively, fewer TGW (8.0%) than MSM (11.8%) in this study reported using PrEP in the past 12 months. Similar to the findings of this study, numerous studies found that PrEP uptake among TGW was lower between 2.5% and 9.0% of the study sample.² In addition, Sevelius et al. (2016)¹¹ reported that the necessity of putting hormone therapy first had the most significant impact on TGW's willingness to use PrEP.

According to this study, TGW were less interested in using PrEP than MSM, which was consistent with other studies.¹¹⁻¹² A different local study by Galka et al. (2020)¹³ found that older age was associated with lower willingness to use PrEP among TGW. In agreement with this study's findings, being less than 25 years old was shown to be significantly associated with TGW's willingness to use PrEP. The same local study also found that willingness to take PrEP among TGW also appeared to be associated with a history of sex work.¹³ In contrast to this study, there were no significant differences in TGW's willingness to use PrEP related to a history of sex work. Out of the 67 TGW who expressed interest in taking PrEP, only four were sex workers.

The findings of this study among MSM align with previous research^{7,14} that identified a correlation between a history of STI symptoms and the willingness to take PrEP. The observed association between a history of STI symptoms and PrEP acceptance suggests a potential increase in accessibility to and familiarity with healthcare facilities. This could be viewed as a positive indicator for implementing PrEP, given that regular testing and follow-up visits are integral components of PrEP utilization.¹⁴

In this study, TGW who were not interested in using PrEP expressed concern about its side effects as one of the main reasons (26.5%). These findings concur with other studies, which also stated side effects as a significant concern for TGW.¹⁵⁻¹⁷

This study had several limitations that should be considered in interpreting the results. Similar to studies in this area, these findings relied on self-reported responses and are subject to reporting and social desirability biases.

CONCLUSION

While acceptance of PrEP remains limited among MSM and TGW, a significant portion still favors condoms as a preventive measure. Consequently, there is a need for adjustments in the current condom marketing strategies. Nonetheless, there is an ongoing necessity to enhance efforts in promoting and offering PrEP as an alternative method of prevention.

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Conflicts of interest

The authors declare no conflicts of interest.

Authors' contributions

Analysis and interpretation of the data: ZHMY, MR

Drafting of the article: ZHMY

Critical revision of the article for important intellectual content: MR, AS

Final approval of the article: AS

REFERENCES

1. Ministry of Health Malaysia (MOH). Global AIDS Monitoring: Country progress report-Malaysia 2022. Retrieved from https://www.moh.gov.my/moh/resources/Penerbitan/Laporan/Umum/MYS_country_report_2021.pdf. Accessed October 25, 2023.
2. Baldwin A, Light B, Allison WE. Pre-exposure prophylaxis (PrEP) for HIV infection in cisgender and transgender women in the U.S.: A narrative review of the literature. *Archives of Sexual Behavior*. 2021;50(4):1713-1728. doi: 10.1007/s10508-020-01903-8.
3. Fonner VA, Ridgeway K, van der Straten A, Lorenzetti L, Dinh N, Rodolph M, Schaefer R, Schmidt HMA, Nguyen VTT, Radebe M, Peralta H, Baggaley R. Safety and efficacy of long-acting injectable cabotegravir as preexposure prophylaxis to prevent HIV acquisition. *AIDS*. 2023;37(6):957-966. doi: 10.1097/QAD.0000000000003494.
4. James MacGibbon, Benjamin R. Bavinton, Kerryn Drysdale¹, Dean Murphy, Timothy R. Broady, Johann Kolstee, Angus Molyneux, Cherie Power, Heath Paynter, John de Wit, Martin Holt. Explicit Relationship Agreements and HIV Pre-exposure Prophylaxis Use by Gay and Bisexual Men in Relationships. *Archives of Sexual Behavior* (2023) 52:761–771 <https://doi.org/10.1007/s10508-022-02382-9>.
5. Alyson Hillis, Jennifer Germain, Vivian Hope, James McVeigh, Marie Claire Van Hou. Pre-exposure Prophylaxis (PrEP) for HIV Prevention Among Men Who Have Sex with Men (MSM): A Scoping Review on PrEP Service Delivery and Programming. *AIDS and Behavior* (2020) 24:3056–3070 <https://doi.org/10.1007/s10461-020-02855-9>.
6. Wale Ajiboye, LaRon Nelson, Apondi Odhiambo, Abban Yusuf, Pascal Djiaideu, DeAnne Turner, M'Rabiu Abubakari, Cheryl Pedersen, Rebecca Brown, Zhao Ni, Genevieve Guillaume, Aisha L offers, and Geoffrey Williams. Decision conflict and the decision support needs of HIV PrEP-eligible Black patients in Toronto regarding the adoption of PrEP for HIV prevention. *Journal of the International Association of Providers of AIDS Care (JIAPAC)* Volume 21, 2022. <https://doi.org/10.1177/23259582211073399>.
7. Jing Han, Jennifer ZH Bouey, Liming Wang, Guodong Mi, Zihuang Chen, Ying He, Tara Viviani and Fujie Zhang. PrEP uptake preferences among men who have sex with men in China: results from a National Internet Survey. Han J et al. *Journal of the International AIDS Society* 2019, 22:e25242 <http://onlinelibrary.wiley.com/doi/10.1002/jia2.25242/full> | <https://doi.org/10.1002/jia2.25242>.
8. Fabiane Soares, Laio Magno, Luís Augusto V. da Silva, Mark Drew Crosland Guimarães, Andrea Fachel Leal, Daniela Knauth, Maria Amélia Veras, Ana Maria de Brito, Carl Kendall, Ligia Regina Franco Sansigolo Kerr, Inês Dourado. Perceived Risk of HIV Infection and Acceptability of PrEP among Men Who Have Sex with Men in Brazil. *Archives of Sexual Behavior* (2023) 52:773–782 <https://doi.org/10.1007/s10508-022-02342-3>

9. Kumar P, Aridoss S, Mathiyazhakan M, Balasubramanian G, Jaganathasamy N, Natesan M, Padmapriya VM, David JK, Rajan S, Adhikary R, Arumugam E. Substance use and risk of HIV infection among Men who have Sex with Men in India: Analysis of National IBBS data, India. *Medicine*. 2020;28,99(35):e21360. doi: 10.1097/MD.00000000000021360.
10. Pattanasin S, Griensven FV, Mock PA, et al. HIV and syphilis prevalence among transgender women and men who have sex with men, Silom Community Clinic, Bangkok, Thailand, 2017-2019. *AIDS Care*. 2022 Oct;34(10):1305-1313. DOI: 10.1080/09540121.2021.1967854. PMID: 34424784.
11. Sevelius JM, Keatley J, Calma N, Arnold E. 'I am not a man': Trans-specific barriers and facilitators to PrEP acceptability among transgender women. *Global Public Health*. 2016;11(7-8): 1060-1075. doi: 10.1080/17441692.2016.1154085.
12. Restar A, Jin H, Operario D. Gender-Inclusive and Gender-Specific Approaches in Trans Health Research. *Transgend Health*. 2021 Oct 4;6(5):235-239. doi: 10.1089/trgh.2020.0054. PMID: 34993295; PMCID: PMC8664111.
13. Galka JM, Wang M, Azwa I, Gibson B, Lim SH, Shrestha R, Wickersham J A. Willingness to use pre-exposure prophylaxis (PrEP) for HIV prevention and PrEP implementation preferences among transgender women in Malaysia. *Transgender Health*. 2020;5(4):258-266. doi: 10.1089/trgh.2020.0003.
14. Naruemon Auemaneekul, Sirirat Lertpruek, Pratana Satitvipawee, Nik AA Tuah. Pre-exposure prophylaxis uptake for HIV infection prevention among young men who have sex with men and transgender women in Bangkok, Thailand. *Journal of Health Research* Vol. 35 No. 5, 2021 pp. 434-443 Emerald Publishing Limited. DOI 10.1108/JHR-10-2019-0242.
15. Ashley Hedrick McKenzie, Ross Shegog, Lara S. Savas, C. Mary Healy, L. Aubree Shay, Sharice Preston, Sharon Coan, Travis Teague, Erica Frost, Stanley W. Spinnerd, and Sally W. Vernon. Parents' stigmatizing beliefs about the HPV vaccine and their association with information seeking behavior and vaccination communication behaviors. *HUMAN VACCINES & IMMUNOTHERAPEUTICS* 2023, VOL. 19, NO. 1, 2214054. <https://doi.org/10.1080/21645515.2023.2214054>.
16. Warwick RM, Araya AC, Shumer DE, Selkie EM. Transgender Youths' Sexual Health and Education: A Qualitative Analysis. *Journal of Pediatric and Adolescent Gynecology*. 2022 Apr;35(2):138-146. DOI: 10.1016/j.jpag.2021.09.011. PMID: 34619356.
17. Radix AE. Management and Prevention of HIV Among Transgender Adults. *Top Antivir Med*. 2020 Dec-Jan;28(3):474-478. PMID: 34107207; PMCID: PMC8224242..