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**National Center for HIV/AIDS, Dermatology and STD**

## **Report**

# **Integrated Biological and Behavioral Survey and Population Size Estimation among Men Who Have Sex with Men and Transgender Women in Cambodia, 2023**

**December 2023**

**Project Director:**

Assistant Professor Ouk Vichea, Director  
National Center for HIV/AIDS, Dermatology and STD (NCHADS), Phnom Penh, Cambodia

**Principal Investigator:**

Dr. Mun Phalkun, Chief of the Surveillance Unit  
National Center for HIV/AIDS, Dermatology and STD, Phnom Penh, Cambodia

**Project Coordinator:**

Dr. Chann Navy, Vice-Chief of the Surveillance Unit  
National Center for HIV/AIDS, Dermatology and STD, Phnom Penh, Cambodia

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Finally, we expect that the findings and recommendations of this IBBS will be used to guide for strategic and program planning to effectively improve update of HIV prevention, care, and treatment services for MSM and TWG, which ultimately contribute to the achievement of the elimination of HIV new infection targets in Cambodia.

Date: 29/...12/2023

Director of National Center for HIV AIDS  
Dermatology and STD



Assistant Professor Ouk Vichea Director

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## Acronyms

ACE	Adverse childhood experiences
AIDS	Acquired immune deficiency syndrome
OR	Odds ratio
ARV	Antiretroviral
BMC	Banteay Meanchey province
BTB	Battambang province
CBO	Community based organization
CI	Confidence interval
CT	Chlamydia trachomatis
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
IBBS	Integrated Biological and Behavioral Surveillance
KCM	Kampong Cham province
KDL	Kandal province
Md	Median
MSM	Men who have sex with men
NCHADS	National Center for HIV/AIDS, Dermatology and STD
NG	Neisseria gonorrhoea
NGO	Nongovernmental organization
NPD	National HIV prevention data base
PIN	Personal identification number
PNP	Phnom Penh province
PrEP	Pre-exposure prophylaxis
RDS	Respondent driven sampling
SHV	Sihanoukville (Phrae Sihanouk province)
SRP	Siem Reap province
STD	Sexually transmitted diseases
STI	Sexually transmitted infections
TGW	Transgender woman
TKO	Takeo province
TPHA	Treponema pallidum hemagglutination assay
\$	United States dollar

# MSM-TGW IBBS-2023 Snapshot



MSM = 1,440 | TGW=938



### Age group



58.6% | 42.5% <25Ys  
 34.9% | 48.1% 25-39Ys  
 6.5% | 9.4% 40+Ys

### Any education



2.1% | 1.5% No  
 97.9% | 98.5% Yes

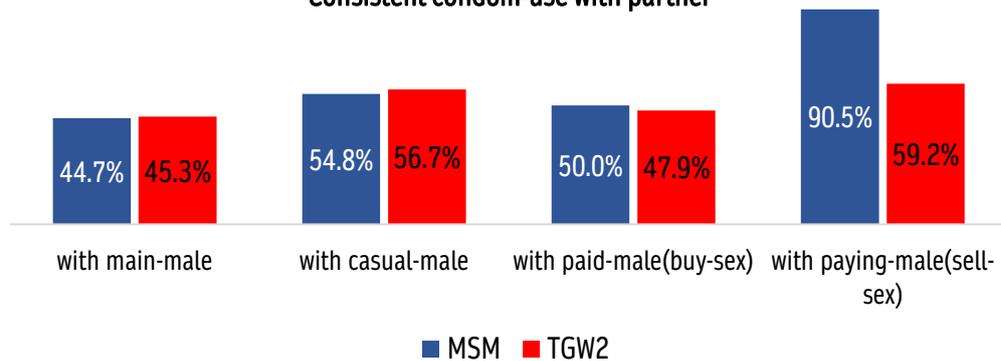
### Partner status



13.5% | 13.2% Not-Living-partner  
 86.5% | 86.8% Living-partner



### Consistent condom-use with partner



HIV = 5.5% | 13.5%



CT = 26.9% | 23.4%



Syphilis = 9.4% | 22.2%



NG = 24.7% | 19.4%



Any STI = 44.9% | 45.3%



CT or NG = 40.2% | 33.5%

## 1 Introduction

Cambodia has been widely credited for its successful control of the HIV epidemic [1, 2]. While its first HIV cases were only detected in 1990, HIV spread rapidly during the following years to an estimated peak number of 15,000 new infections in 1996. Since then, the estimated number of new infections gradually declined to 2,000 by the year 2010 and stabilized at around 1,400 annually in 2016 [3]. Of the latter, 1,000 are estimated to occur in men aged 15 and over [4]. While the initial HIV epidemic in Cambodia was mainly due to heterosexual transmission [5, 6], by the start of the present century new HIV epidemics started to emerge among men who have sex with men (MSM) and transgender women (TGW) in the South-east Asian region, including in Cambodia [7-9]. To monitor this novel epidemic and to inform and evaluate the impact of HIV preventive interventions, the government of Cambodia and its partners initiated its first integrated biological and behavioral surveillance (IBBS) among MSM in 2010 [10] and among TGW in 2012 [11]. In 2010, the HIV prevalence among MSM was found 2.1% but increased to 4.0% in 2019; among TGW it more than doubled from 4.2% in 2012 to 9.6% in 2019 [12]. These signs of ongoing HIV transmission in combination with estimated population sizes of 90,000 MSM and 16,000 TGW, may explain, at least in part, why the estimated number of new HIV infections in Cambodia has been stable during the past few years. Hence, MSM and TGW may be considered as one of the main drivers of the current HIV epidemic in the country.

Already in 2013 [13], and again in 2016 and 2019 [14, 15] the government of Cambodia expressed its commitment to eliminate all new HIV infections and remove AIDS as a public health threat from the country by 2025. To assess progress towards these goals and to inform national strategic programming and planning, this 2023 IBBS in MSM and TGW is conducted to provide accurate and latest data on the prevalence of HIV and sexually transmitted infections (STI), population sizes, risk behaviors and exposure and uptake of preventive interventions. Such data are also necessary for Global AIDS Monitoring [16] purposes, to inform AIDS Epidemic Modelling [17] and to compile HIV Country Progress reports for the

Global Fund to fight AIDS, Tuberculosis Malaria [18], and other international and national stakeholders and donors.

## 2 Objective

The objective of the current survey is to gather in-depth information on HIV and STI prevalence, HIV risk behaviors and practices, mental health factors, access to HIV prevention services and population size among MSM and TGW in Cambodia.

### 2.1 Specific objectives

Specific objectives of this survey are to examine among MSM and TGW in Cambodia:

1. The prevalence of HIV, history of syphilis, hepatitis C virus (HCV), Chlamydia trachomatis (CT) and Neisseria gonorrhoea (NG)
2. HIV risk behaviors and practices (including sexual and drug use behaviors)
3. Mental health factors (including non-consensual sex and drugging)
4. Access to HIV prevention, treatment, and care services (including HIV testing, HIV PrEP, exposure to HIV prevention programs)
5. Factors associated with HIV prevalence
6. Population size estimation of MSM and TGW
7. Geographic and between group variations in the objectives listed above.

### 3 Methods

#### 3.1 Study design

This study design is a behavioral and biological cross-sectional survey using respondent driven sampling (RDS) to enroll participants.

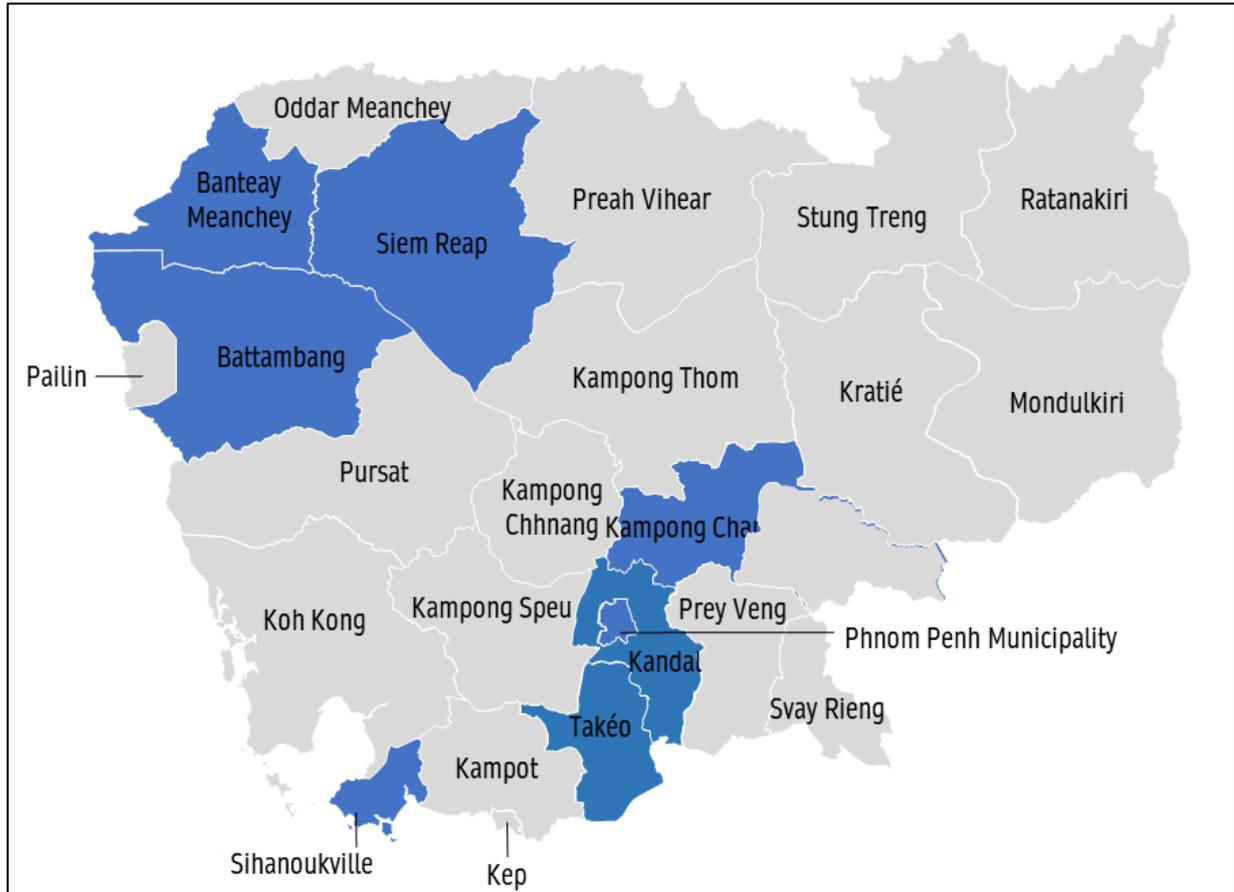
#### 3.2 Survey sites

The survey was conducted in eight provinces: Banteay Meanchey, Battambang, Kandal, Kampong Cham, Phnom Penh, Siem Reap, Takeo, and Sihanoukville (Phrae Sihanouk). Provinces were selected based on the HIV prevalence found in the 2019 IBBS among MSM and TGW [12], information from the National HIV Prevention Data Base (NPD) and their geographic location and development (table 1).

Table 1 Listing of provinces and reasons for inclusion in IBBS among MSM and TGW, 2023

Province	HIV prevalence in IBBS 2019 MSM and TGW % (n/N)	Reason for inclusion
Banteay Meanchey	TGW 17.7 [20/113] MSM 3-6	National HIV Prevention Data Base shows high HIV risk
Battambang	TGW 3-6 MSM 3-6	National HIV Prevention Data Base shows high HIV risk
Kandal	TGW 3-6 MSM 1.5-3	Risk potential (close to Phnom Penh high HIV prevalence area)
Kampong Cham	TGW 3-6 MSM (not included in 2019)	Risk potential (close to Phnom Penh high HIV prevalence area)
Phnom Penh	TGW 14.4 [31/221] MSM 6.1 [13/213]	National HIV Prevention Data Base shows high HIV risk
Siem Reap	TGW 16.4 [21/128] MSM 6.9 [23/336]	National HIV Prevention Data Base shows high HIV risk
Takeo	Not included in 2019	Risk potential (close to Phnom Penh high HIV prevalence area)
Sihanoukville	TGW 3-6 MSM 0 [0/16]	Risk potential (Rapid tourist development)

Figure 1 Map of provinces (in blue) included in IBBS among MSM and TGW 2012/3 in Cambodia



### 3.3 Study population

The population recruited in the present survey are MSM and TGW. MSM are defined as men who engaged in anal sexual activity with members of the same sex, regardless of how they identified themselves [19]. TGW are defined as male to female transgender persons who were labeled male at birth but who identified on the female spectrum as TGW, female or third sex [20].

### 3.4 Sample size calculation

Assuming an HIV prevalence in the population of MSM of 8% (a doubling since 2019) and an estimated MSM population size of 30,000, we need a sample size of at least 1,382 subjects to satisfy the 95% degree of assurance requirement with a margin of error of 2% and a design effect of 2:

$$n = (Z/M)^2 p(1-p) D \text{ or } n = (1.96/0.02)^2 0.08 (1-0.08) 2 = \mathbf{1,382}$$

Where n=sample size, Z=1.96 or area under the normal distribution, M=margin of error  
 p=expected proportion and D=design effect

A sample size of n=1,382 MSM is sufficient to say with a 95% degree of assurance that the HIV prevalence in the MSM population is 8% +/- 2%.

Similarly, if we assume the 2019 HIV prevalence in the population of TGW to have doubled to 18%, with an estimated TGW population size of 5000, we need a sample size of at least 848 subjects to satisfy the 95% degree of assurance requirement with a margin of error of 3.5% and a design effect of 2.

$n = (Z/M)^2 p(1-p) D \text{ or } n = (1.96/0.035)^2 0.18 (1-0.18) 2 = \mathbf{848}$
--

A sample size of n=848 is sufficient to say with a 95% degree of assurance that the HIV prevalence in the TGW population is 18% +/- 3.5%. Should the HIV prevalence in MSM or TGW be lower, we may reduce the margin of error, making our population estimates more robust.

Considering these calculations and to account for possible variations in HIV prevalence, the total sample size for the current survey was set at N=2,400. In previous rounds of IBBS, the enrollment ratio of MSM vs. TGW was 1.5:1. Hence, it was aimed to enroll a total of n=1,440 MSM and n=960 TGW. This translates into approximately 180 MSM and 120 TGW in each of the selected provinces (table 2). Actual numbers enrolled and seeds needed depended on the success of local recruitment chains.

*Table 2 Planned number of MSM and TGW enrolled, and seeds needed by province in IBBS 2023*

Province	MSM		TGW	
	# Sample	# Seeds	# Sample	# Seeds
Banteay Meanchey	180	2	120	2
Battambang	180	2	120	2
Kampong Cham	180	2	120	2
Kandal	180	2	120	2
Phnom Penh*	180	2	120	2
Sihanoukville*	180	2	120	2
Siem Reap*	180	2	120	2
Takeo	180	2	120	2
<b>Total</b>	<b>1440</b>	<b>16</b>	<b>960</b>	<b>16</b>

*\* In each of these provinces, seeds were asked to recruit at least one Chemsex user, who was asked to recruit at least one other Chemsex user. The aim of the survey was to recruit 40 Chemsex users per province. The total number of users may therefore be n=120, or 13% (120/900) of those recruited in the three selected provinces*

### 3.5 Eligibility

Eligibility criteria for MSM and TGW in the current IBBS are listed in table 3 below.

Table 3 Eligibility criteria among MSM and TGW in IBBS 2023

MSM	TGW
	Self-identified as TGW or as a woman
At least 15 years	At least 15 years
Male at birth	Male at birth
Having had anal sex with another male (including TGW) in the past 12 months	Having had anal sex with another male (including TGW) in the past 12 months
Able to communicate in Khmer	Able to communicate in Khmer
Able and willing to provide written informed consent to take part in the survey	Able and willing to provide written informed consent to take part in the survey

### 3.6 Recruitment

RDS was used to recruit MSM and TGW in the survey. The number of study sites in each province depended on the number of MSM and TGW available for recruitment at each location. The survey team had extensive experience in the conduct of RDS from previous rounds of IBBS in key populations. A description of RDS and its ensuing process is presented below.

#### 3.6.1 Description of respondent driven sampling

RDS is a type of chain referral sampling used for recruiting hidden or hard-to-reach populations. RDS relies on multiple waves of peer-to-peer recruitment [21]. RDS sampling consists of the following three steps:

**Seed selection:** All RDS studies begin with a small number of seeds from the target population. Seeds should be diverse and well-networked, but they do not need to be chosen randomly.

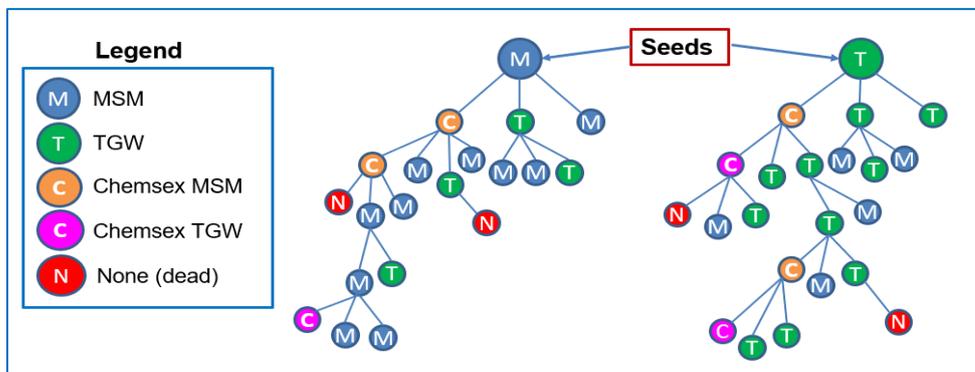
**Interviews and recruitment:** Seeds complete the interview (and specimen collection) process and receive a predetermined number of coupons that they can use to recruit other people like them (Wave 1). The recruits of Wave 1 then complete the same process and recruit Wave 2. This referral chain continues until the desired sample size is reached.

**Incentives:** Participants receive two incentives: one for completing the initial data collection process, and one for each peer that is successfully recruited (and completes the data collection process as well).

### 3.6.2 Respondent driven sampling in this survey

Four seeds were identified in each province. Two seeds were MSM, and two seeds were TGW, all well-networked in MSM and TGW circles. Each seed was given three coupons for further enrollment. In Phnom Penh, Sihanoukville and Siem Reap, seeds were asked to sign up at least one MSM/TGW “Chemsex user” as one of their three recruits. Chemsex user recruits were also tasked to enroll at least one other Chemsex user (see figure 2). It was aimed to recruit approximately 40 other MSM/TGW Chemsex users in each of the three provinces. A Chemsex user is defined as an MSM or TGW who used drugs for sexual pleasure at least once in the past 12 months in a setting with two participants or more.

Figure 2 Proposed recruitment chain for Chemsex users in three selected provinces



Chemsex drugs are defined as amphetamine, methamphetamine, crystallized methamphetamine, ecstasy, ketamine, mephedrone or gamma hydroxy butyrate (or its precursor drug). Street names (slang) and photos of these drugs were shown in the questionnaire. Inhaled nitrates (poppers) and marijuana (ganja) do not classify as Chemsex drugs. Seeds (and eventually their recruits) were educated about the survey, gave their informed consent, received instructions about coupons and how to use them for recruitment. Seeds were the first to complete the interview, had their specimens collected, received the incentive (\$ 6) and three coupons to refer additional MSM and TGW into the

survey. For each successful enrollment the seeds (and later their recruits) received \$ 2. Each participant had a budget of \$ 6 as compensation for travel.

Seeds and recruits were given a personal identification number (PIN) to track their performance and link them to their recruits. This PIN code was used to link all data collected from an individual in each of the survey steps. Except for participants who wished to get their off-site study laboratory test results (NG and CT), the PIN was not linked with any personal information. If the initial seeds were unable to recruit participants or if enrollment was halted because recruitment chains “died” (i.e., stopped recruiting), additional seeds were selected based on the above criteria until the required sample size had been reached.

### **3.6.3 Data collection**

#### **3.6.3.1 Questionnaire data**

Social-behavioral data were collected using an interviewer administered standardized questionnaire programmed on a tablet (see annex 1). The original questionnaire was developed using standardized and validated tools adapted from previous studies among MSM and TGW in Cambodia [11, 12]. For reasons of comparability, questions were mostly similar to those asked during previous rounds of IBBS in MSM and TGW. Specific sections were dedicated to TGW issues, Chemsex use and mental health. The questionnaire was initially developed in English and then translated into Khmer.

The survey questionnaire collected the following information:

- Socio-demographic characteristics
- MSM and TGW identity and related experiences
- Gender affirming hormone use (for TGW only)
- Sexual behaviors and condom use with different sexual partners
- Substance use (tobacco, alcohol, illicit drugs)
- Chemsex behaviors and experiences
- STI symptoms and HIV testing
- Exposure to HIV prevention, treatment, and care services
- Social media and online data app use
- Mental health factors (A copy of the questionnaire is attached in annex 1.)

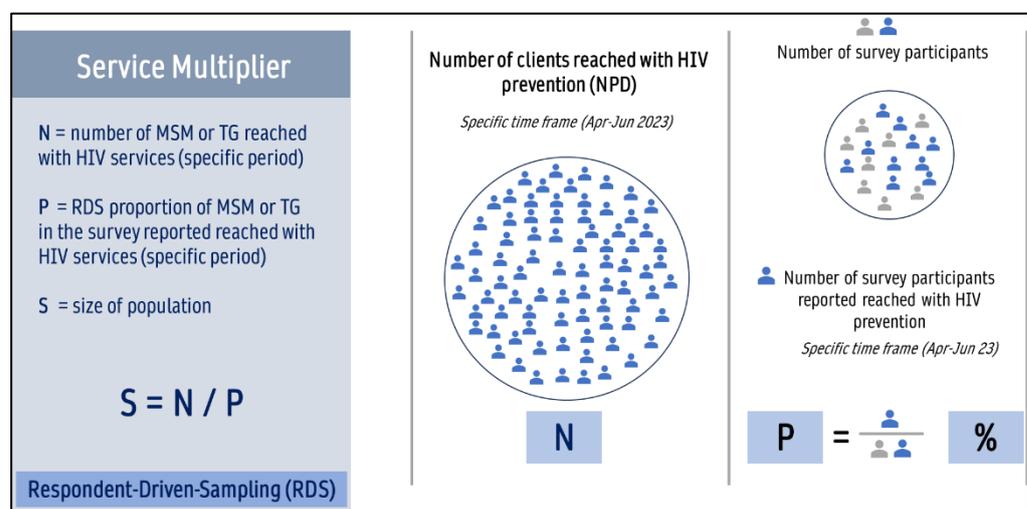
### 3.6.3.2 Biological specimens

A blood sample (a quarter of a teaspoon) was collected by a trained technician for rapid HIV and syphilis antibody testing (SD Bioline HIV/Syphilis Duo Test) and evaluation for the presence of HCV infection. If rapid HIV reactive, a confirmatory test was conducted on site using HIV 1/2 STAT-PAK® Assay. All participants received HIV pre- and post-test counseling, including discussion of the results. Confirmed newly detected HIV cases were referred to the local HIV treatment and care facility for HIV recency and viral load testing. Anogenital samples were self-collected for evaluation of the presence of CT and NG infection by polymerase chain reaction (PCR) testing by the laboratory at the National Center for HIV/AIDS, Dermatology and STD (NCHADS). Left-over blood samples were collected and shipped with anogenital specimens to the National laboratory. Samples were tested according to the relevant routine protocols available at the National laboratory.

### 3.6.4 Population size estimation using the service multiplier

The service multiplier methodology involves asking all MSM and TGW in IBBS whether they had received HIV/STI prevention services (HIV/STI education, condom/lubricant distribution, referral to testing services) in the three months prior to the survey (April, May, and June 2023). This is the denominator for the calculation. Then data were extracted from the national prevention database (NPD) of NCHADS about the number of MSM and TGW reached with HIV prevention services during April, May, and June 2023. This will be the numerator for the calculation. Figure 3 shows the formula of the service multiplier method.

Figure 3 Service multiplier formula



### ***3.6.5 Statistical analysis***

Statistical analysis was conducted descriptively by comparing MSM and TGW. The prevalence of HIV and STI was calculated by dividing the number of reactive cases by the total number of individuals tested. Similarly, the prevalence of socio-demographic and sexual characteristics, risk behaviors and other factors was calculated by dividing the number of affirmative answers by the total number of participants who responded to these questions. Chi-square (for categorical variables) and T-tests (for interval variables) were used to assess statistical differences between groups. Z-scores were calculated to statistically compare proportions.

In bivariate analyses, newly identified HIV positive cases were compared with those remaining HIV negative with respect socio-demographic and sexual characteristics, STI prevalence, sexual and drug use behaviors, exposure, and uptake of HIV services (including HIV [self-] testing history and HIV PrEP. Multivariate logistic regression analysis was performed to assess factors independently associated with newly identified HIV infection. Factors with a p-value of less than 0.15 in bivariate analyses, those known to be associated with HIV infection and those of theoretical interest were included in the model. Bivariate and multivariate odd's ratios (OR) were presented to describe variables included in the final model. All analyses were conducted in IBM SPSS Statistics (version 29.0) (Chicago, IL, USA) and STATA, Statistical Software for Data Science (version 15.0) (College Station, TX, USA).

### ***3.6.6 Ethics approval***

The protocol of this IBBS was approved by the Cambodian National Ethics Committee for Health Research on February 24, 2023 (No. 069, NECHR). All participants provided written informed consent to take part in the survey.

## 4 Results

### 4.1 Respondent driven sampling

A total of 2,378 (1,440 MSM and 938 TGW) participants were enrolled from eight provinces between April and August 2023 (table 4). Data was collected consecutively in two batches of three provinces, followed by a final batch of two provinces. With the exception of Banteay Meanchey, two seeds were used in MSM and TGW each in all provinces. The mean number of waves across all provinces was 8 (range 7 – 10). Forty-eight Chemsex using MSM and TGW could be enrolled, of which 36 (75.0%) were recruited from target provinces, Phnom Penh, Siem Reap and Sihanoukville (table 4).

Table 4 Number of seeds, waves and participants enrolled in IBBS among MSM and TGW, 2023

Province	Seeds and waves		MSM	TGW	Total # enrolled	Chemsex users
	# seeds	# waves				
Banteay Meanchey	5	9	151	149	300	-
Battambang	4	7	184	116	300	-
Kampong Cham	4	10	177	119	296	2
Kandal	4	8	206	93	299	-
Phnom Penh	4	7	178	121	299	10
Sihanoukville	4	9	178	110	288	19
Siem Reap	4	8	184	112	296	7
Takeo	4	9	182	118	300	10
<b>Total</b>	<b>33</b>	<b>67</b>	<b>1,440</b>	<b>938</b>	<b>2,378</b>	<b>48</b>

### 4.2 Sociodemographic and sexual characteristics

Table 5 presents sociodemographic and sexual characteristics of MSM and TGW who participated in the 2023 IBBS. MSM appeared to be slightly younger than TGW (24.9 versus 27.6 years) and more often identified as male (93.7%). TGW usually identified as female or transgender (84.6%). Whereas almost half of MSM described their sexual orientation as bisexual, this characteristic was rarely reported by TGW (3.8%) (table 5). Fewer TGW had ever been married (2.8% versus 8.9%) and were also less likely to cohabit with a partner (16.4% versus 20.8%). No differences were found between MSM and TGW regarding mean years of education or mean monthly income earned during the past six months. TGW appeared to be more likely employed in the service sector, whereas MSM more often held labor or private sector jobs (table 5).

Table 5 Sociodemographic and sexual characteristics among MSM and TGW in IBBS 2023

Characteristic	MSM (N=1,440)		TGW (N=928)		P value
	Not Weighted	Weighted	Not Weighted	Weighted	
<b>Age in years</b>					
Mean [Median]	24.9 [22]		27.6 [27]		0.000
15 – 19	39.2%	39.4%	23.6%	34.4%	
20 – 24	19.4%	17.9%	19.0%	20.3%	
25 – 34	26.5%	26.5%	35.8%	28.1%	
≥ 35	14.9%	16.2%	21.6%	17.1%	
<b>Sexual identity</b>					
Male	93.7%	93.6%	15.5%	13.7%	0.000
Female	5.4%	5.8%	65.4%	72.9%	
Transgender	0.9%	0.5%	19.2%	13.4%	
<b>Sexual orientation</b>					
Gay/homosexual	47.1%	44.6%	90.7%	87.9%	0.000
Bisexual	49.0%	50.4%	3.8%	4.6%	
Heterosexual	3.9%	4.9%	5.3%	7.5%	
<b>Current marital status*</b>					
Married	6.9%	9%	1.8%	1.8%	0.000
Widowed/divorced/separated	1.9%	1.6%	1.0%	0.9%	
Never married	91.1%	89.4%	97.2%	97.3%	
<b>Cohabiting with partner</b>					
Yes	20.8%	20.8%	16.4%	14.3%	0.015
No	79.2%	79.2%	83.6%	85.7%	
<b>Years of formal education completed</b>					
Mean (Md)	8.8 [9]		8.9 [9]		0.517
Never attended school (0 years)	2.2%	2%	1.5%	1.5%	
Primary school (1-6 years)	19.9%	18.9%	20.8%	20.5%	
Secondary school (7-12 years)	73.2%	77.4%	73.3%	74.8%	
Higher education (≥13 years)	4.8%	1.7%	4.4%	3.3%	
<b>Monthly income in the past six months (\$=US dollar   1\$=4,000 Riels)</b>					
Mean [Median]	\$ 333 [\$ 200]		\$ 314 [\$ 200]		0.880
≤ 100	29.4%	26.5%	21.7%	31.1%	
101 – 300	53.7%	53%	55.7%	53.6%	
301 – 500	10.3%	14.7%	14.1%	10.6%	
> 500	6.7%	5.8%	8.5%	4.7%	
<b>Current occupation (Multiple answers possible)</b>					
Hairdresser/beautician	9.0%	3.2%	34.1%	14.7%	0.000
Entertainment/sex worker	0.3%	1.8%	9.1%	5.1%	0.000
Manual labor	52.2%	20.7%	33.4%	15.7%	0.000
Private sector	26.3%	13.6%	19.4%	5.8%	0.000
Student	21.0%	20.3%	14.0%	18.6%	0.000

### 4.3 Hormone use and gender enhancement among TGW

About a quarter of TGW (26.3%) reported to have ever used effeminizing hormones, usually birth control pills (57.5%) or female hormone tablets (44.1%). Of hormones using TGW, 18.2% said to have injected them (figure 4). Usually, hormonal preparations were obtained from a pharmacy (85.8%) and about one-third had their use being supervised by a health care worker. Having had a hormonal blood-test was rare (14.6%). Few TGW had undergone gender enhancement procedures or surgery (7.2%) (table 6).

Figure 4 Hormone use experience among TGW in IBBS 2023

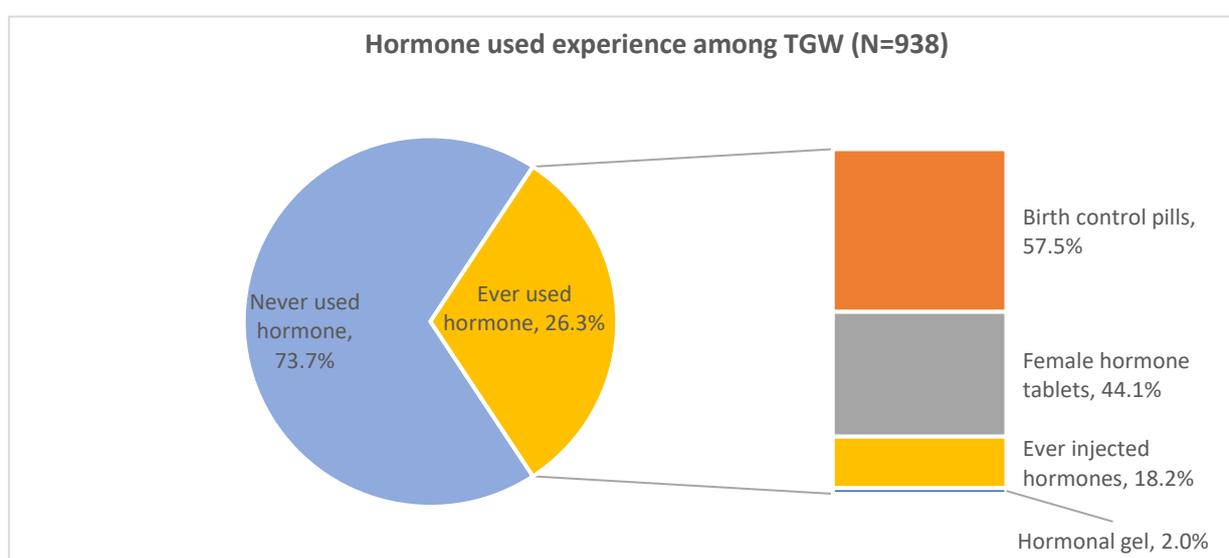


Table 6 Hormone use and gender enhancement surgery among TGW in IBBS 2023

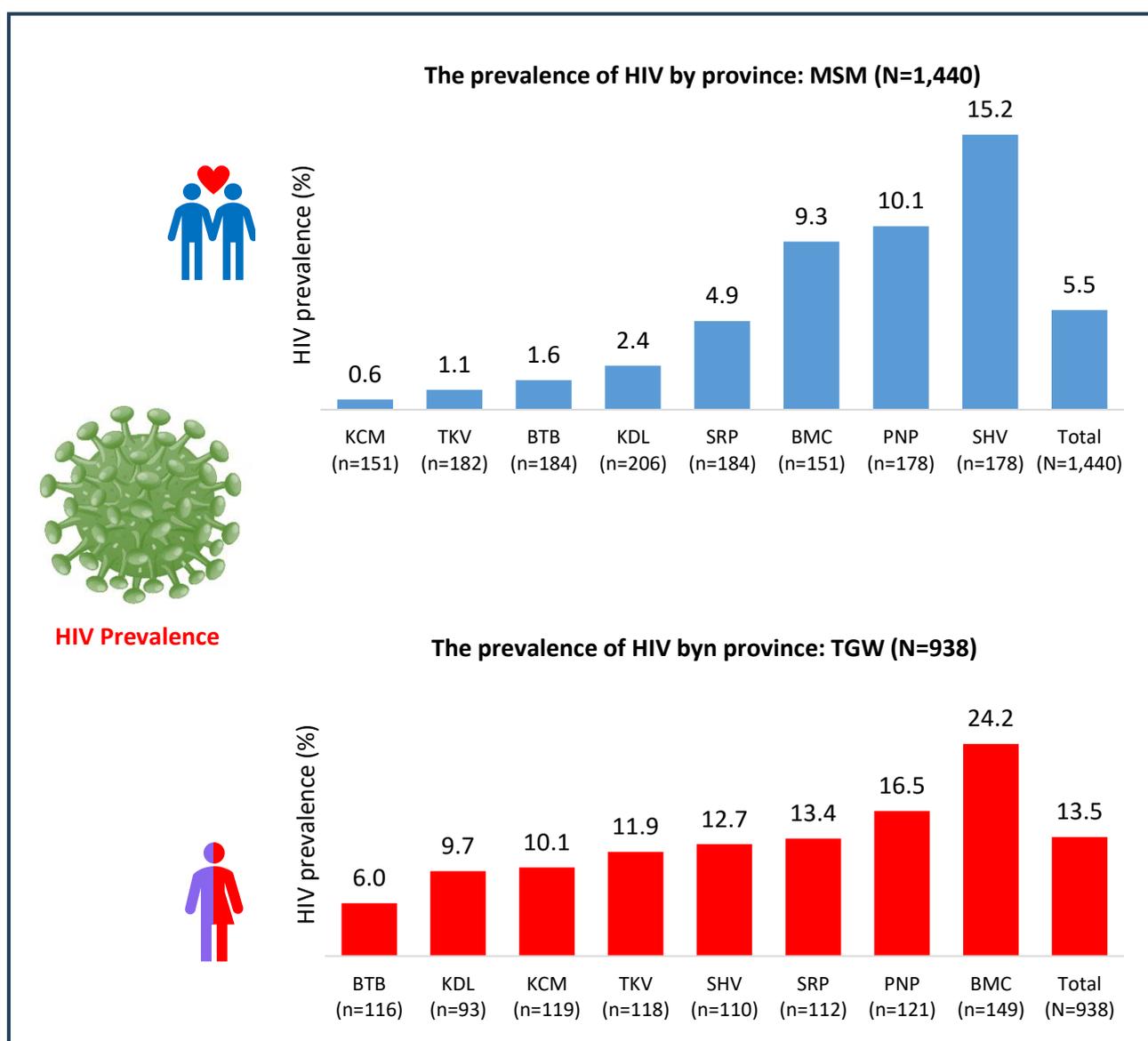
Hormone use	TGW (N=928) n (%)	
	Not Weighted	Weighted
<b>Where did you get your hormones? *†</b>		
Pharmacy	212 (85.8%)	85.7%
Health service	30 (12.1%)	14.9%
Friends	23 (9.3%)	7.3%
Others	2 (0.8%)	0.2%
<b>Health care worker oversaw hormone use?</b>	83 (8.9%)	4.6%
<b>Ever had hormone blood level test?</b>	36 (3.8%)	1.6%
<b>Underwent gender enhancement procedures or surgery</b>	67 (7.1%)	3.3%

\*Among those who used hormones; † Multiple answers possible; § Column totals may vary due to missing values (applies to this and all following tables in this report)

## 4.4 HIV prevalence

Figure 5 depicts the HIV prevalence among MSM and TGW. The HIV prevalence among MSM was highest in Sihanoukville (15.2%), followed by Phnom Penh (10.1%) and Banteay Meanchey (9.3%). Overall HIV prevalence among MSM was 5.5% (figure 5). The HIV prevalence among TGW was highest in Banteay Meanchey (24.2%), followed by Phnom Penh (16.5%), Sihanoukville (13.7%) and Siem Reap (13.4%). Overall HIV prevalence among TGW was 13.5% (figure 5).

Figure 5 HIV prevalence among MSM and TGW in IBBS 2023, by province



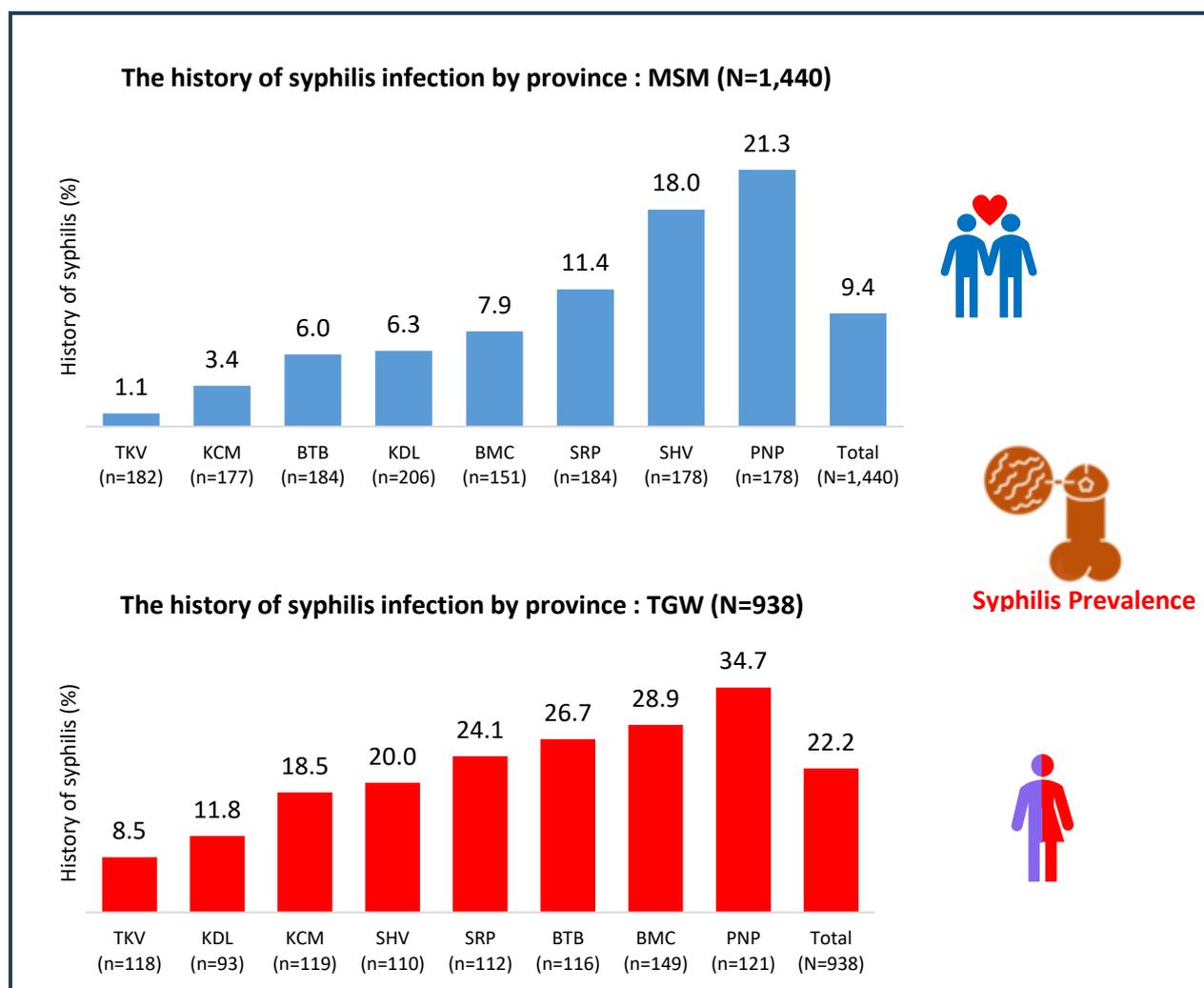
Note: Unweighted HIV prevalence for 2023, the weight data available in [Appendix 1](#).

## 4.5 History of syphilis infection

History of syphilis infection (as assessed by treponema pallidum hemagglutination assay [TPHA reactivity) among MSM and TGW is presented in figure 6. Among MSM, syphilis infection history was highest in Phnom Penh (21.3%), followed by Sihanoukville (18.0%) and Siem Reap (11.4%). Overall, 9.4% of MSM had a history of syphilis infection (figure 6).

Among TGW, syphilis infection history was highest in Phnom Penh (34.7%), followed by Banteay Meanchey (28.9%), Battambang (26.7%) and Siem Reap (24.1%). Overall, 22.2% of TGW had laboratory evidence of past or current syphilis infection (figure 6).

Figure 6 History of syphilis infection (TPHA reactivity) among MSM and TGW in IBBS 2023, by province

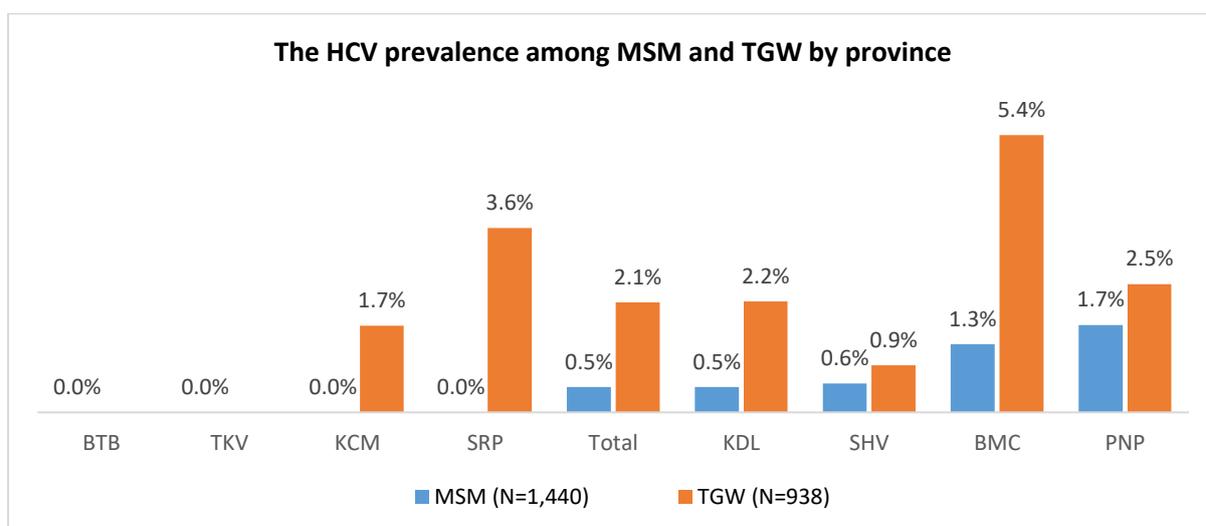


Note: Unweighted Syphilit prevalence for 2023, the weight data available in [Appendix 2](#).

## 4.6 HCV prevalence

The presence of antibodies against HCV infection was established among MSM in four provinces: Phnom Penh (1.7%), Banteay Meanchey (1.3%), Sihanoukville (0.6%) and Kandal (0.5%). The overall prevalence of HCV infection among MSM was 0.5%. Among TGW, HCV prevalence was 5.4% in Banteay Meanchey, 3.6% in Siem Reap, 2.5% in Phnom Penh, 2.2% in Kandal, 1.7% in Kampong Cham and 0.9% in Sihanoukville. The overall HCV prevalence among TGW was 2.2%.

Figure 7 The HCV prevalence among MSM and TGW in IBBS 2023, by province



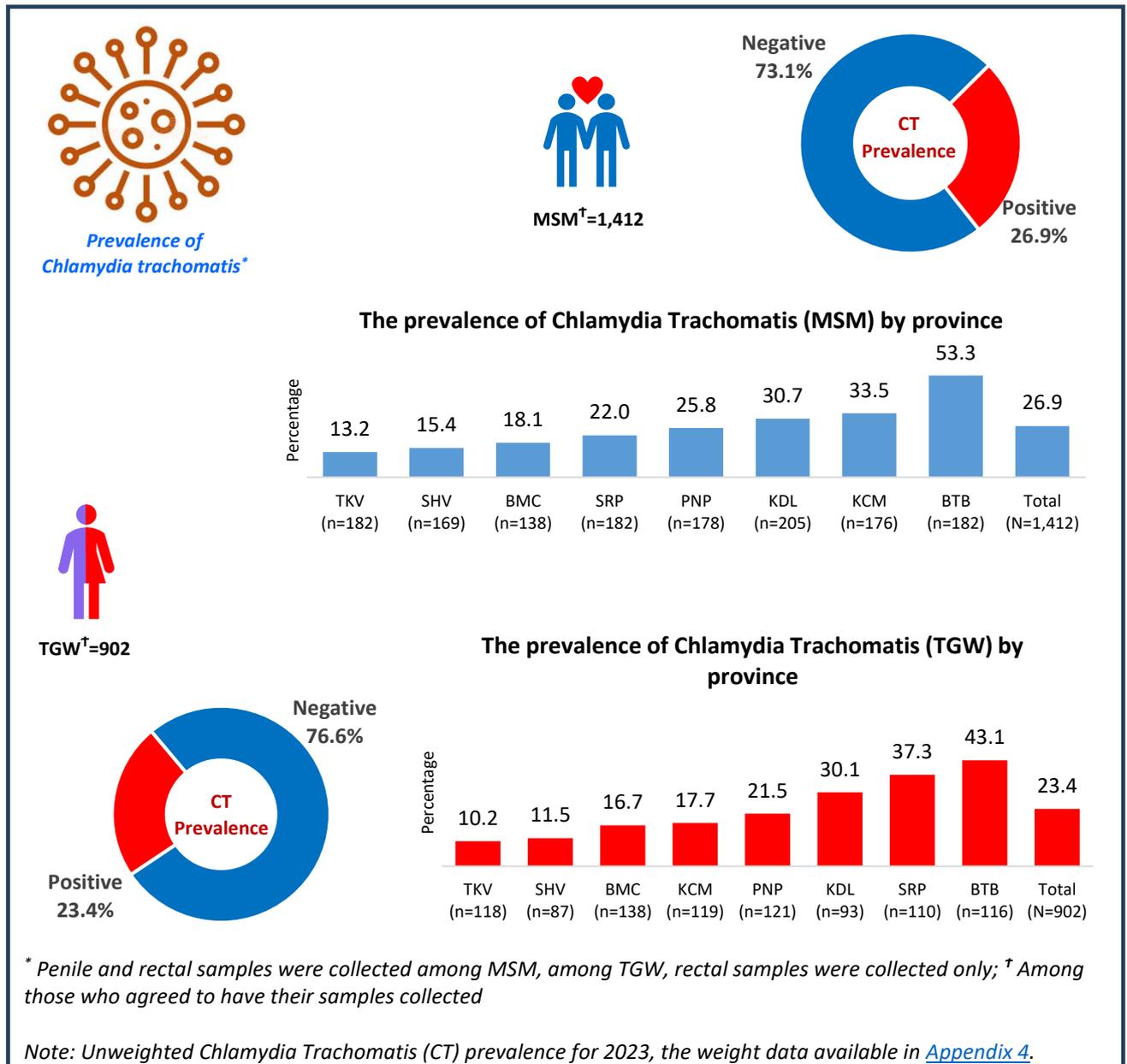
Note: Unweighted HCV prevalence for 2023, the weight data available in [Appendix 3](#).

## 4.7 Prevalence of Chlamydia trachomatis and Neisseria gonorrhoea

### 4.7.1 Chlamydia trachomatis

Prevalence of anogenital CT among MSM varied widely across provinces. A total of 380 (26.9%) MSM showed laboratory evidence of anogenital infection, with prevalence being higher in Battambang (53.3%), Kampong Cham (33.5%) and Kandal (30.7%) (figure 8). A rather similar picture was found with respect to the prevalence of rectal CT in TGW. A total of 211 (23.4%) TGW showed laboratory evidence of rectal infection with prevalence being higher in Battambang (43.1%), Siem Reap (37.3%) and Kandal (30.1%) (figure 8).

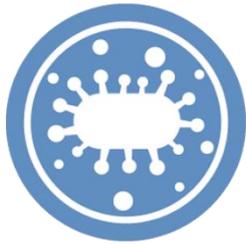
Figure 8 Prevalence of Chlamydia trachomatis infection among MSM and TGW in IBBS 2023



#### 4.7.2 Neisseria gonorrhoea

Like CT, prevalence of anogenital NG among MSM differed considerably across provinces. A total of 348 (24.7%) MSM presented laboratory evidence of anogenital NG infection, with presence being higher in Kandal (41.0%), Kampong Cham (33.0%) and Phnom Penh (29.8%) (figure 8). Of TGW, 175 (19.4%) presented laboratory evidence of rectal NG infection, with presence being higher in Kandal (34.4%), Siem Reap (33.6%) and Phnom Penh (23.1%) (figure 9).

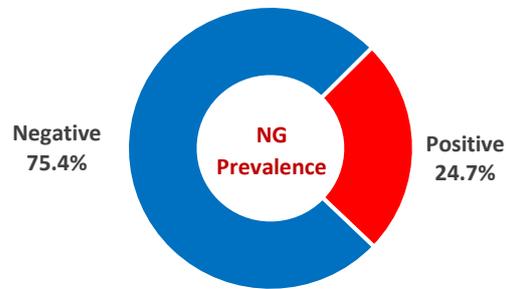
Figure 9 Prevalence of *Neisseria gonorrhoea* infection among MSM and TGW in IBBS 2023 (unweighted)



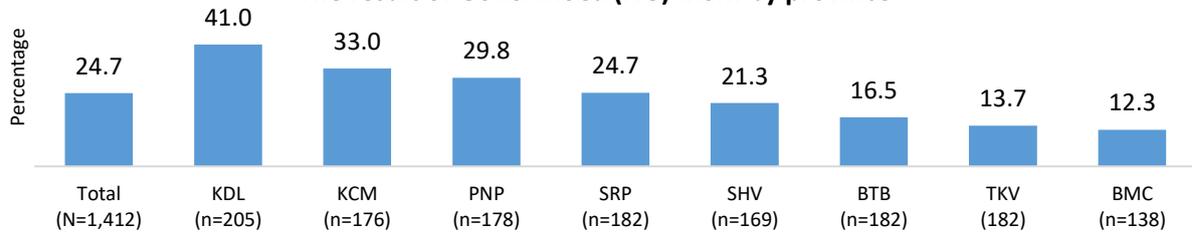
Prevalence of *Neisseria gonorrhoea*\*



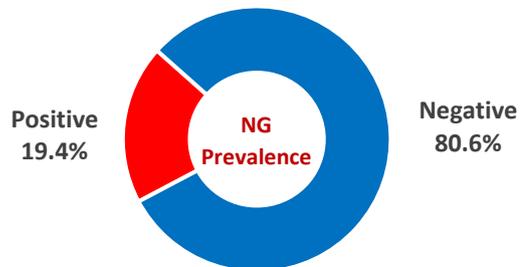
MSM<sup>†</sup>=1,412



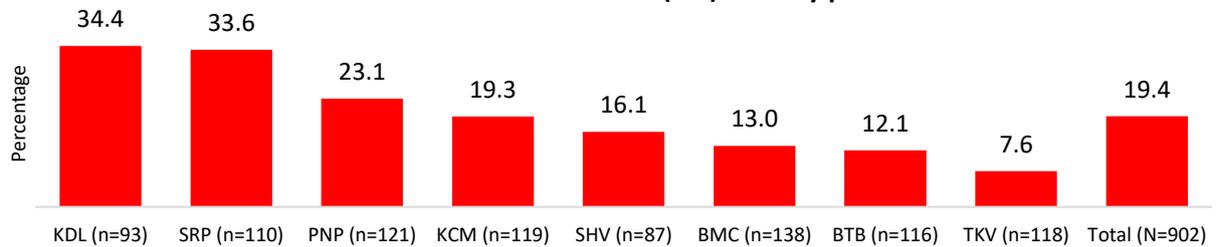
The result of Gonorrhoea (NG) MSM by province



TGW<sup>†</sup>=902



The result of Gonorrhoea (NG) TGW by province



\* Penile and rectal samples were collected among MSM, among TGW, rectal samples were collected only; † Among those who agreed to have their samples collected

Note: Unweighted *Neisseria Gonorrhoea* prevalence for 2023, the weight data available in [Appendix 5](#).

## 4.8 Sexual and substance use behavior

### 4.8.1 Sexual behavior

Table 8 shows the MSM and TGW sexual partners included male, female and TGW. Compared consistent condom-use across all sexual partner type during the past six months varied between 40% and 50% but did not differ between MSM and TGW. On the other hand, MSM who sell-sex to male partner report that they always used condom 90.5%, but only 37% with female paying partners (table 8). In addition, the table below mentioned that some of TGW experience had sex with female partner in the past 6 months, while 17.6% reported they always use condom with main-female partner and 51.6% with casual-female partners.

*Table 7 The consistent condom uses across partner types during the past six months among MSM and TGW in IBBS 2023*

Respondents	Sexual Partner Types				
	Sexual Population	Main Partners	Casual Partners	Paid Partners (Buy-sex)	Paying Partners (Sell-sex)
MSM		n=523	n=958	n=116	n=201
	Male	44.7%	54.8%	50.0%	90.5%
	TGW	44.1%	45.8%	31.0%	43.8%
	Female	33.3%	49.8%	46.4%	36.8%
TGW		n=406	n=776	n=121	n=206
	Male	45.3%	56.7%	47.9%	59.2%
	TGW	-	42.3%	-	-
	Female	17.6%	51.6%	-	-

### 4.8.2 Substance use behavior

Substance use behavior among MSM and TGW in IBBS 2023 can be found in table 9. Recent alcohol use was common (~80%) but did not differ between MSM and TGW. TGW however, were less likely to have ever smoked than MSM (79.9% versus 53.7%). In this sample of MSM and TGW, reported drug use was uncommon, including Chemsex. This behavior was reported by 48 participants (2.0%) and did not differ between MSM and TGW.

Table 8 Substance use behavior among MSM and TGW in 2023 IBBS

Substance	MSM (N=1440)		TGW (N=938)		P value
	Not Weighted	Weighted	Not Weighted	Weighted	
<b>Alcohol use</b>					
Never	20.0%	20.0%	23.3%	24.0%	0.060
≤ Monthly (during past three months)	44.6%	44.1%	46.1%	50.3%	
> Once a month	19.0%	19.0%	14.6%	13.5%	
> Once a week	9.8%	9.0%	7.3%	6.9%	
≤ Daily	6.5%	8.0%	8.6%	6.4%	
<b>Smoking (Cigarettes or vaping)</b>					
Never smoked	53.7%	55.2%	79.7%	76.0%	0.000
≤ 1 per day (during the past six months)	10.8%	14.5%	19.5%	17.5%	0.016
2 - 5	30.7%	32.7%	32.1%	36.9%	
6-15	36.1%	32.6%	24.7%	24.8%	
≥ One pack or more	19.3%	17.4%	18.5%	15.1%	
Stopped smoking	3.0%	2.8%	5.3%	5.6%	
<b>Drug use (ever)</b>					
Never used drugs	81.5%	81.2%	84.4%	85.6%	0.061
Inhaled nitrites (Poppers)	11.0%	13.9%	11.7%	11.2%	0.606
Marijuana (Ganja)	5.7%	2.8%	3.3%	2.7%	0.007
Amphetamine (Yaa Baa)	1.9%	1.7%	1.4%	1.3%	0.306
Crystal methamphetamine (Ice)	4.0%	3.4%	3.5%	3.1%	0.527
Ketamine (K)	2.1%	1.2%	2.9%	2.6%	0.215
Another drug (Ecstasy, GHB, etc.)	2.7%	-	2.2%	-	-
Any drug (except Viagra)	18.3%	-	15.5%	-	-
Viagra or similar drug	2.1%	-	1.5%	-	0.296
Chemsex experience	1.9%	2.9%	2.2%	1.8%	0.538

## 4.9 Exposure to HIV prevention programming and HIV testing

### 4.9.1 Exposure to HIV prevention programming

Exposure to HIV prevention programming among MSM and TGW in IBBS 2023 is presented in table 10. Most participants (~80%) had talked to an outreach worker, usually within the past year (~95%). Condoms and lubricants were the items most commonly received (~95%) during these conversations. About three-quarters (~75%) of respondents reported they had been looking online for health information during the past three months. TGW appeared to have talked to an outreach worker more often (84.8% versus 80.1%) and more recently (past month 35.4% versus 24.7%) than did MSM. TGW also looked slightly more often for health information online than MSM (85.8% versus 90.6%) (table 10).

Table 9 Exposure to HIV prevention programming among MSM and TGW in IBBS 2023

Exposure	MSM (N=1440)		TGW (N=938)		P value
	Not Weighted	Weighted	Not Weighted	Weighted	
<b>Talked to HIV peer educator or outreach worker (ever)</b>					
Yes	80.1%	85.4%	84.8%	83.0%	<0.003
No	19.9%	14.6%	15.2%	17.0%	
<b>How long ago was this?</b>					
Past month	24.7%	44.0%	35.4%	41.6%	<0.001
Past 3 months	54.0%	33.0%	42.7%	36.4%	
Past year	13.2%	11.8%	17.6%	16.0%	
Longer ago	8.1%	11.3%	4.2%	6.1%	
<b>What items did you receive? *</b>					
None	2.0%	1.4%	2.6%	1.5%	0.521
Condoms	93.2%	99.0%	97.7%	98.7%	
Lubricant	97.8%	96.5%	93.5%	95.1%	
Printed information	63.1%	75.6%	61.3%	69.8%	
<b>Looked online for health information during the past three months</b>					
Yes	85.8%	88.8%	90.6%	91.3%	0.024
No	14.2%	11.2%	9.4%	8.8%	

The latest time you had sex with a casual male partner, did you or your partner use a condom? **					
	(n=957)		(n=776)		0.058
<b>Not used</b>	9.2%	11.2%	6.7%	6.9%	
<b>Used</b>	90.8%	88.8%	93.3%	93.1%	

\*More than one item possible

\*\*Response to LFA indicators

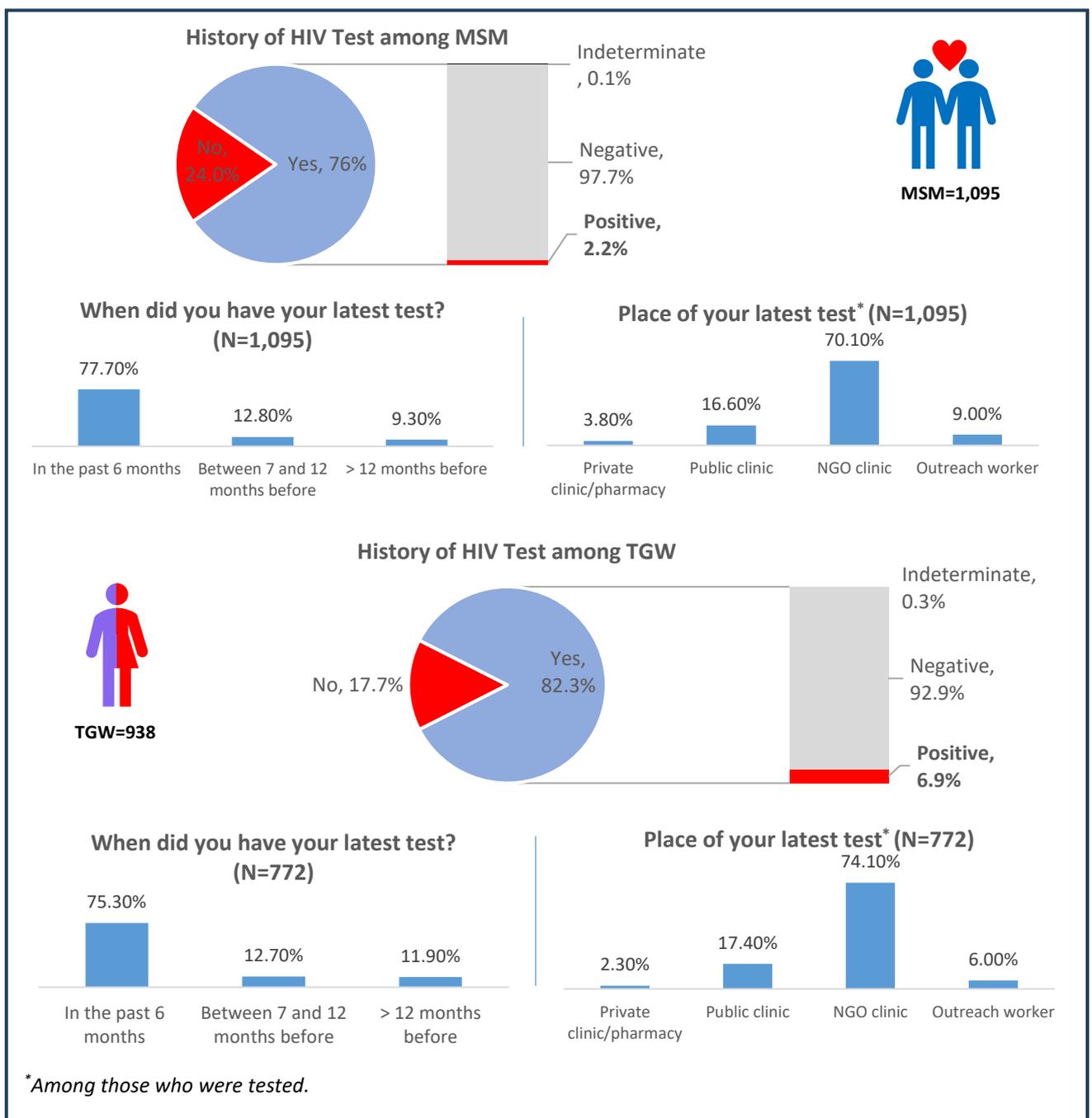
Table 10: The HIV status by age group and key population (Response to LFA indicators)

Age groups	MSM-HIV status			TGW-HIV status		
	Negative	Positive	Total	Negative	Positive	Total
<b>&lt;25Ys</b>	819	25	844	367	32	399
	97.0%	3.0%	100.0%	92.0%	8.0%	100.0%
<b>&gt;25Ys</b>	542	54	596	444	95	539
	90.9%	9.1%	100.0%	82.4%	17.6%	100.0%
<b>Total</b>	1,361	79	1,440	811	127	938
	94.5%	5.5%	100.0%	86.5%	13.5%	100.0%

### 4.9.2 HIV testing history

Figure 10 presents history of HIV testing and uptake of antiretroviral (ARV) treatment among MSM and TGW in IBBS 2023. TGW appeared to have been tested for HIV more often than did MSM (82.3% versus 76.0%), but there was no difference in having been tested during the past 6 months. There were no differences between MSM and TGW regarding the most recent HIV test outcome and uptake of ARV treatment. Remarkably, uptake of ARV treatment was high in both groups (>95%).

Figure 10 History of HIV testing among MSM and TGW in IBBS 2023



The significantly of MSM and TGW reported that received the HIV test at NGO clinic (70.1% Vs. 74.1%), while less than 20% seeking the HIV testing services at public health facility (figure 10). Furthermore, the HIV self-tested by using oral fluid had more often among the MSM if compared to TGW (21.5% vs 17.2%).

Table 12 shows the association between HIV self-reports (negative, not previously tested or previously unknown, or positive) and the HIV testing outcome among MSM and TGW in IBBS 2023. Interestingly, 4.0% (n=57) of MSM and 9.0% of TGW (n=80) who self-reported to be HIV negative or had not been tested before or had a previously unknown test-result, tested HIV positive in IBBS. This implies that 58 out of 80 or 73.4% of MSM and 80 out of 127 or 62.2% of TGW HIV positive cases were newly identified. The number was slightly significantly different between MSM and TGW (73.4% versus 62.2%; P <.05). This leaves us with n=137 newly identified HIV infections from this IBBS for use in multivariate logistical analysis where MSM and TGW will be used as a covariate (see section 4.9.7).

*Table 11 Association between HIV self-reports and HIV testing outcome among MSM and TGW in IBBS 2023*

HIV self-report	HIV prevalence (in IBBS)					
	Negative n (%)		Positive n (%)		Total n (%)	
	Not Weight	Weighted	Not Weighted	Weighted	Not Weighted	Weighted
<b>MSM</b>						
Negative, not tested, or previously unknown*	1359 (96.0%)	(95.6%)	57 (91.7%)	(83.1%)	1416 (100%)	(100%)
Positive	2 (8.3%)	(16.9%)	22 (4.0%)	(4.4%)	24 (100%)	(100%)
Total	1361 (94.5%)	(91.2%)	879 (5.5%)	(8.8%)	1440 (100%)	(100%)
<b>TGW</b>						
Negative, not tested. or previously unknown*	805 (91.0%)	(93.2%)	80 (88.7%)	(91.9%)	885 (100%)	(100%)
Positive	6 (11.3%)	(8.1%)	47 (9.0%)	(6.9%)	53 (100%)	(100%)
Total	811 (86.5%)	(85.6%)	127 (13.5%)	(14.4%)	938 (100%)	(100%)

\*Latest result was indeterminate

### 4.9.3 Knowledge and uptake of HIV PrEP

Knowledge and use of HIV PrEP among MSM and TGW in IBBS 2023 is shown in figure 11-12. TGW had heard about PrEP slightly more often and were also more likely to have used it in the past twelve months. About 85% of MSM and TGW who used it in the past twelve months were still using it at the time of the survey. The most common reasons for stopping PrEP were no longer being at risk or use of condoms. Side effects as a reason for stopping PrEP were given by a minority. PrEP was usually obtained through a CBO but also through NGO clinics and public hospitals (figure 11-12).

Figure 11 Knowledge and use of HIV PrEP among MSM in IBBS 2023

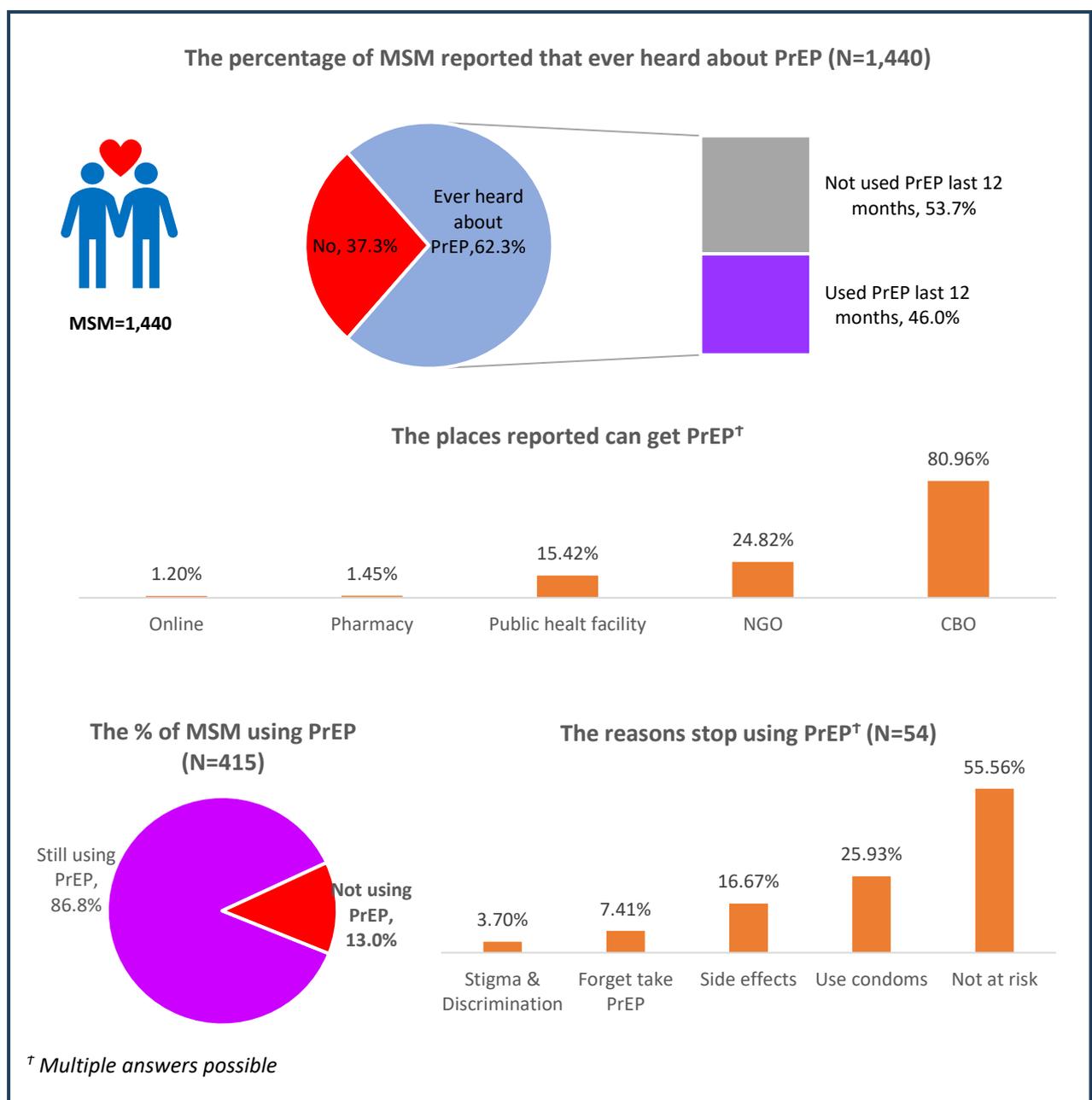
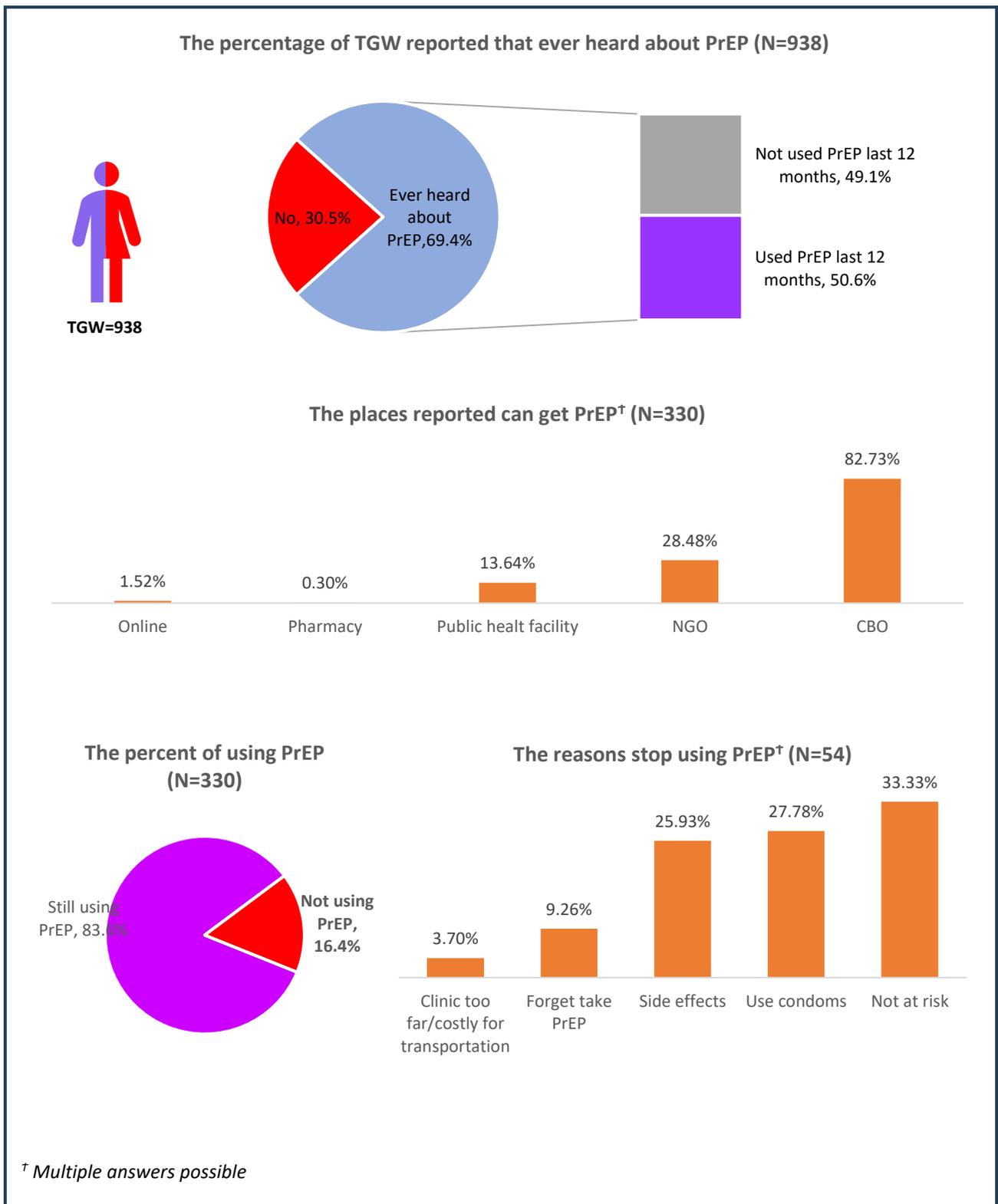


Figure 12 Knowledge and use of HIV PrEP among TGW in IBBS 2023



#### 4.9.4 History of sexually transmitted infections

STI history among MSM and TGW in IBBS 2023 is depicted in table 14. About two-thirds of MSM and TGW ever had a sexual health checkup, usually at a family health or NOG clinic or hospital. MSM did more often report to have had any STI symptoms (discharge, pain, sore or ulcer in the anogenital area) during the past 12 months (22.8% versus 14.6%). TGW had been diagnosed with active syphilis more often than MSM (10.3% versus 6.4%) but there was difference in treatment for this condition between MSM and TGW (table 14).

Table 12 Sexually transmitted infection history among MSM and TGW in IBBS 2023

STI history	MSM (N=1431)		TGW (N=927)		P value
	Not Weighted	Weighted	Not Weighted	Weighted	
<b>Ever had sexual health check-up</b>					
Yes	41.0%	40.5%	44.4%	45.2%	0.304
No	59.0%	59.5%	55.6%	54.8%	
<b>What type of facility did you visit</b>					
Family health clinic or hospital	24.6%	17.1%	28.7%	23.0%	0.259
NGO clinic	63.8%	79.1%	62.2%	74.2%	
Private clinic	5.8%	3.8%	4.4%	2.8%	
		<b>N=1440</b>	<b>N=938</b>		
<b>Had any STI symptoms during the past 12 months</b>					
Yes	22.8%	23.3%	14.6%	13.8%	<0.001
No	77.2%	76.7%	85.4%	86.2%	
<b>Ever diagnosed with active syphilis</b>					
Yes	6.4%	8.1%	10.3%	7.2%	<0.001
No	93.6%	90.9%	89.7%	91.8%	
<b>Ever been treated for syphilis*</b>					
Yes	84.9%	84.1%	93.0%	84.0%	0.190
No	15.1%	15.9%	7.0%	16.0%	

\* Among those who were ever diagnosed

#### 4.9.5 Sexual coercion factors

Table 15 shows sexual coercion experiences factors among MSM and TGW in IBBS 2023. TGW have experienced slightly more often sex against their will than did MSM (6.1% versus 4.3%). There were no differences in the number of times this occurred or in the age of first occurrence between MSM and TGW. In addition, some respondents rarely reported they experienced drugging before sex to make them incapable or unconscious.

Table 13 Sexual coercion and mental health factors among MSM and TGW in IBBS 2023

Sexual coercion and mental health factors	MSM (n=1440)		TGW (n=938)		P value
	Not Weighted	Weighted	Not Weighted	Weighted	
<b>Ever experienced sex against your will</b>					
Ever	4.3%	4.3%	6.1%	4.5%	0.030
Never	95.7%	95.7%	93.6%	95.5%	
<b>Number of times this occurred *</b>					
1	52.5%	61.1%	43.9%	43.3%	0.389
2	24.5%	22.9%	29.8%	25.4%	
3 – 4	13.1%	12.3%	10.5%	14.2%	
> 4	9.8%	3.7%	15.7%	17.2%	
<b>Age at first occurrence (years)</b>					
< 18	42.6%	22.2%	29.8%	29.5%	0.158
18 – 21	32.7%	39.3%	29.8%	22.2%	
≥ 22	24.6%	38.5%	40.4%	48.3%	
<b>Ever been drugged before sex</b>					
Ever	2 (0.1)	-	3 (0.3)	-	0.307
Never	1436 (99.9)	-	931 (99.7)	-	

\*Among those with the experience;

#### 4.9.6 Mental health factors

No differences were found with respect to psychological distress (Kessler test, see questionnaire in annex 1) and adverse childhood experiences (ACE test, see questionnaire in annex 1). The Kessler score was calculated by compare mean among the MSM (mean=18.2 and median = 17) and TGW (mean=18.7 and median=19). Regarding to the Kessler score, almost 50% of MSM and TGW self-reported about disorder. There is no difference were found with respect to psychological distress among MSM and TGW. Mild disorder among TGW had slightly more than MSM (23.7% vs. 10.4%), while moderate disorder 9.3% vs. 10.4%, and server disorder 15.6% vs. 15.4% (figure 14). Furthermore, table 13 was described about the adverse childhood experience that reported by MSM and TGW in IBBS 2023.

Figure 13 The score of Kessler among MSM and TGW in IBBS 2023

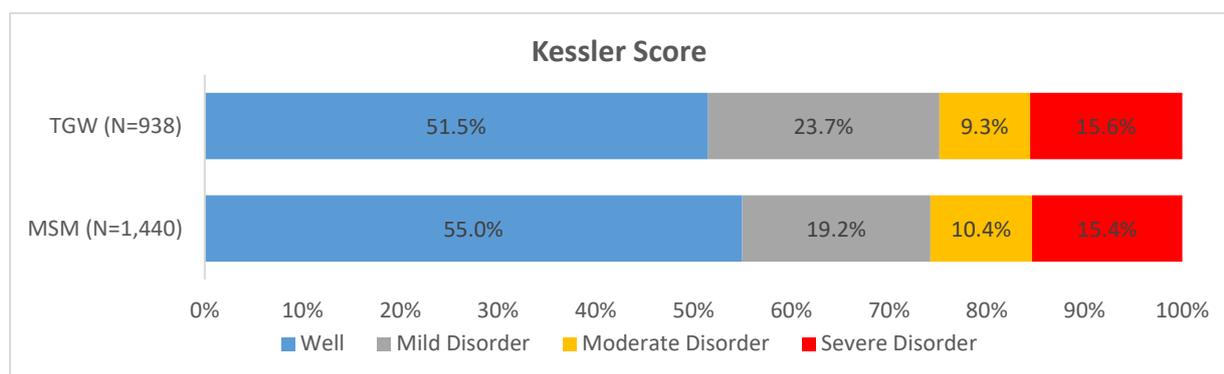


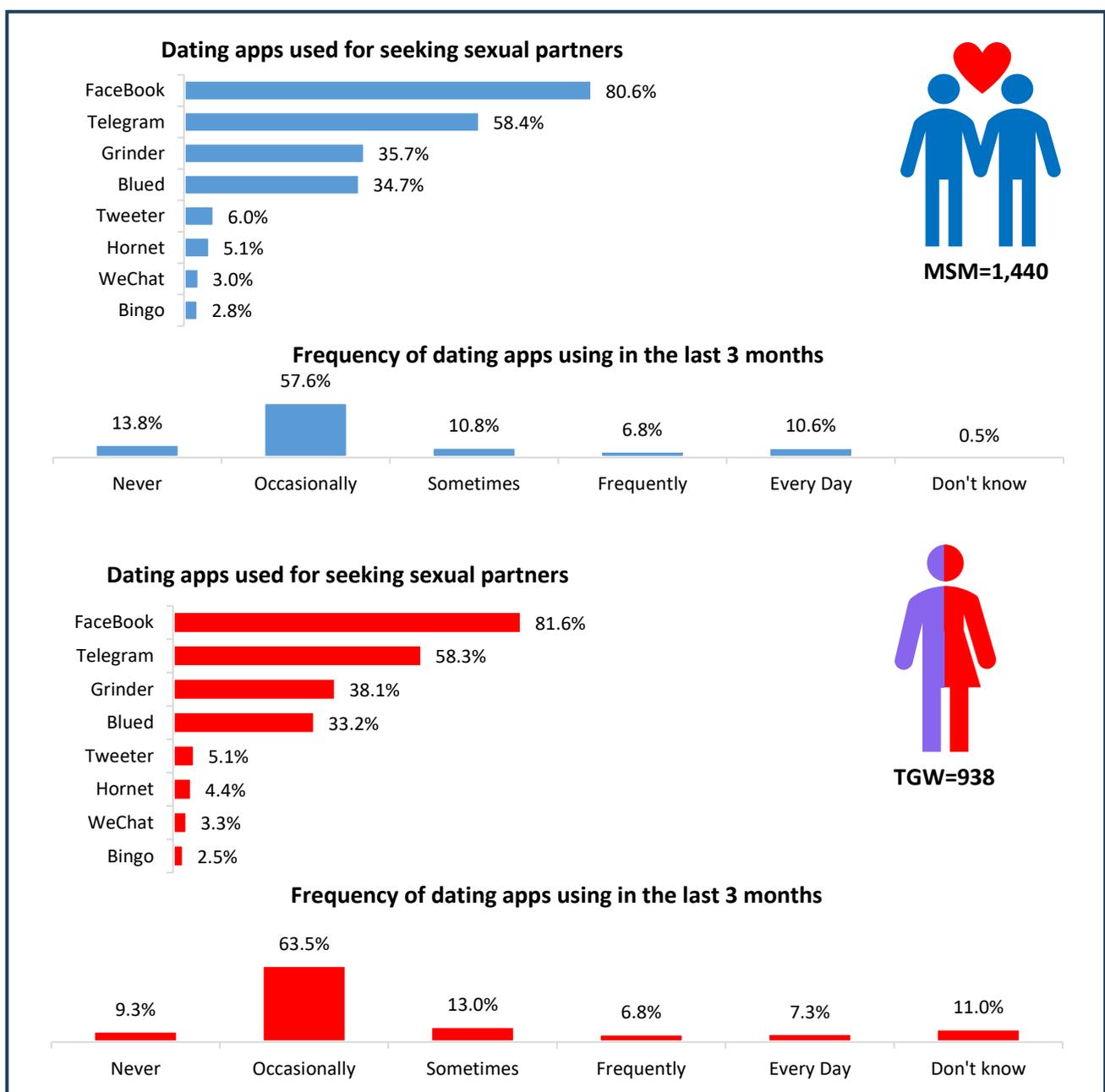
Table 14 The adverse childhood experience (ACEs) reported by MSM and TGW in IBBS 2023

Adverse childhood experience (ACEs)	MSM		TGW		Total	
	N	Col%	N	Col%	N	Col%
I have been hit, slapped, kicked or received physical punishment from a parent or other adult guardian	232	16.1%	146	15.6%	378	15.9%
People in my family have said hurtful or insulting things to me.	217	15.1%	138	14.7%	355	14.9%
Someone has tried to touch me or make me touch them in a sexual way, make me do or watch sexual things, or actually did something sexual with me.	117	8.1%	72	7.7%	189	7.9%
There has been someone to take care of me, protect me, and take me to medical care when I get sick.	1,159	80.5%	755	80.5%	1,914	80.5%
There has been someone in my family who helped me feel that I was loved and important.	1,087	75.5%	715	76.2%	1,802	75.8%
In the past 12 months, has anyone ever physically hurt you such as hit or choke you, or threatened you with a knife or other weapon?	36	2.5%	32	3.4%	68	2.9%
In the past 12 months, has anyone tricked you, lied to you, or threaten you to make you have sex with them when you didn't want to?	39	2.7%	19	2.0%	58	2.4%
In the past 12 months, has anyone verbally yelled at you, insult you, intimate or scare you on purposes?	41	2.8%	27	2.9%	68	2.9%

#### 4.9.7 Looking for sex partners online and use of dating apps and websites

Looking for sexual partners online during the past three months was relatively common among both MSM and TGW, but slightly more frequent among the latter (57.9% versus 63.6%,  $P=.001$ ) (figure 15). Blued and Grinder were the most popular dating apps (~35%) used by MSM and TGW, whereas Telegram (~58%) and Facebook (~80%) were the most popular social media platforms among both groups (figure 15). Figure 6 Looking for sexual partners online during the past three months among MSM and TGW in IBBS 2023.

Figure 14 Most popular dating apps and websites used among MSM and TGW in IBBS 2023



#### 4.9.7 Bivariate and multivariate analysis of risk factors for newly identified HIV infection

Table 14 presents the results of bivariate and multivariate logistic regression analysis of factors associated with newly identified HIV infection (not previously known to be HIV infected). In bivariate analysis, being TGW, having had more than five male sexual partners in the past six months, not always using condoms during the same period and laboratory evidence for past or current syphilis infection (TPHA reactive) were associated with increased risk for newly identified HIV infection. History of smoking, PrEP use during the past 12 months were associated with decreased risk.

In multivariate analysis, currently cohabitating with a sexual partner and laboratory evidence for past or current syphilis infection were independently associated with increased risk for newly identified HIV infection. PrEP use during the past 12 months was independently associated with decreased risk (table 14).

Table 15 Results of bivariate and multivariate logistic regression analysis of risk factors for newly identified HIV infection among MSM and TGW in IBBS 2023

Risk factor (categorical)	Total n (%)	Newly HIV positive n (%)	Bivariate analysis		Multivariate analysis	
			OR (95% CI)	P value	OR (95% CI)	P value
Overall	2301 (100)	137 (6.0)				
Enrollment category						
MSM	1416 (61.5)	57 (4.0)	1			
TGW	885 (38.5)	80 (9.0)	2.37 (1.67 – 3.37)	<.001		
Age category (years)						
15 – 19	766 (33.3)	46 (6.0)	1			
20 – 24	444 (19.3)	28 (6.3)	1.05 (.649 – 1.71)			
25 – 34	690 (30.0)	36 (5.2)	.862 (.550 – 1.35)			
≥35	401 (17.4)	27 (6.7)	1.13 (.691 – 1.85)	.752		
Income category (\$)						
≤100	608 (26.4)	35 (5.8)	1			
101 – 300	1251 (54.4)	75 (6.0)	1.04 (.691 – 1.58)			
301 – 500	270 (11.7)	15 (5.6)	.963 (.517 – 1.80)			
>500	172 (7.5)	12 (7.0)	1.23 (6.23 – 2.42)	.931		
Entertainment or sex worker						
No	2177 (94.6)	132 (6.1)	1			
Yes	124 (5.4)	5 (4.0)	.651 (.262 – 1.62)	.365		
History Alcohol use						
No	495 (21.5)	37 (7.5%)	1			
Yes	1804 (78.5)	100 (5.5)	.726 (.491 – 1.07)	.109		
History of smoking						
No	1460 (63.5)	114 (7.8)	3.01 (1.91 – 4.75)			
Yes	841 (36.5)	23 (2.7)	1	<.001		
History of drug use						

No	1871 (81.3)	115 (6.1)	1			
Yes	430 (18.7)	22 (5.1)	.823 (.515 – 1.32)	.416		
Chemsex experience						
No	2260 (98.2)	132 (5.8)	1			
Yes	41 (1.8)	5 (12.2)	2.239 (.864 – 5.80)	.097		
Prep use past 12 months						
No	760 (50.5)	63 (8.3)	1		1	
Yes	744 (49.5)	26 (3.5)	.400 (.251 – .640)	<.001	.249 (.100 – .615)	.003
Used HIV oral self-test						
No	1856 (81.0)	118 (6.4)	1.48 (.903 – 2.44)			
Yes	434 (19.0)	19 (4.4)	1	.120		
Currently living with sexual partner						
No	1862 (81.0)	104 (5.6)	1		1	
Yes	438 (19.0)	33 (7.5)	1.38 (.918 – 2.07)	.122	3.08 (1.28 – 7.40)	.012
Number of male sex partners past 6 months						
≤ 2	855 (43.1)	43 (5.0)	1			
3 – 5	637 (33.9)	47 (7.0)	1.42 (.925 – 2.17)			
>5	458 (23.1)	37 (8.1)	1.66 (1.05 – 2.62)	.073		
Condom use past 6 months						
Not always	520 (58.2)	43 (8.3)	2.71 (1.41 – 5.22)			
Always	373 (41.8)	12 (3.2)	1	.003		
Anal sex role past 6 months						
Insertive	331 (37.1)	21 (6.3)	1.24 (.697 – 2.22)			
Receptive	561 (62.9)	29 (5.2)	1	.462		
Looking online for sex partners past 3 months						
No	275 (12.0)	17 (6.2)	1			
Yes	2018 (88.0)	120 (5.9)	.960 (.568 – 1.62)	.877		
Syphilis (TPHA)						
Non-reactive	2000 (86.9)	64 (3.2)	1		1	
Reactive	301 (13.1)	73 (24.3)	9.69 (6.74 – 13.92)	<.001	8.24 (3.47 – 19.6)	<.001
Neisseria gonorrhoea						
Non-reactive	1738 (77.6)	95 (5.5)	1			
Reactive	501 (22.4)	38 (7.6)	1.49 (.961 – 2.10)	.078		
Chlamydia trachomatis						
Non-reactive	1666 (74.4)	94 (5.6)	1			
Reactive	537 (25.6)	39 (6.8)	1.22 (.830 – 1.80)	.310		

OR, Odds Ratio; CI, confidence interval; \$, US dollar; TPHA, treponema pallidum hemagglutination assay

## 5 Population size estimation

### 5.1 Background

Sampling of hidden and hard-to-hard populations is challenging and there are no perfect methods to define the accurate size of these populations. There are many different population size estimation techniques for hidden populations, however for reasons of practicality in this survey it was decided to use the service multiplier methodology to estimate the population size of MSM and TGW.

### 5.2 Provincial population size estimates

Table 15 shows the outcomes of the population size estimation using the service multiplier in the eight selected provinces. The population size of MSM estimated across all provinces was 42,637. The population size of TGW was estimated to be 9,683. The largest population sizes of MSM (13,262) and TGW (4,448) were estimated in Phnom Penh.

Table 16 Estimated number of MSM and TGW in eight provinces in IBBS 2023

Province	MSM			TGW		
	N (Count)	P (Multiplier)	S (Estimate)	N (Count)	P (Multiplier)	S (Estimate)
Banteay Meanchey	4,523	0.85	5,321	796	0.67	1,197
Battambang	4,022	0.89	4,529	626	0.96	651
Kampong Cham	2,001	0.51	3,908	259	0.34	64
Kandal	2,545	0.61	4,179	737	0.51	1,439
Phnom Penh	13,262	0.74	17,922	3763	0.85	4,448
Preah Sihanouk	1,105	0.73	1,522	366	0.90	405
Siem Reap	2,232	0.89	2,502	594	0.82	724
Takeo	2,627	0.95	2,754	50	0.91	55
<b>Total</b>	<b>32,317</b>	<b>0.79</b>	<b>42,637</b>	<b>7,191</b>	<b>0.77</b>	<b>9,683</b>

### 5.3 Aggregation of provincial population size estimates to the national level

Table 16 shows the population sizes estimated from the service multiplier method by province along with their male population sizes aged 15-49 years derived from parameters of the Cambodia Spectrum 2022 model. Spectrum is the global and country-specific HIV/AIDS modelling tool developed by UNAIDS [22].

The number of MSM and TGW estimated in IBBS was divided by the Spectrum generated age specific population sizes to calculate the proportion of MSM and TGW by province (table 16).

Table 17 Population size estimation of MSM and TGW by province

Province	MSM			TGW	
	PSE (IBBS)	Male Population 15-49 years	% of MSM1*	PSE (IBBS)	% of TGW
Banteay Meanchey	5,321	248,707	2.14%	1,197	0.48%
Battambang	4,529	285,017	1.59%	651	0.23%
Kampong Cham	3,908	250,672	1.56%	764	0.30%
Kandal	4,179	337,984	1.24%	1,439	0.43%
Phnom Penh	17,922	642,578	2.79%	4,448	0.69%
Preah Sihanouk	1,522	93,836	1.62%	405	0.43%
Siem Reap	2,502	289,100	0.87%	724	0.25%
Takeo	2,754	250,637	1.10%	55	0.02%
<b>Total</b>	<b>42,637</b>	<b>2,398,531</b>	<b>1.78%</b>	<b>9,683</b>	<b>0.40%</b>
	MSM			TGW	
Kampong Cham	3,908	250,672	1.56%	764	0.30%
Kandal	4,179	337,984	1.24%	1,439	0.43%
Preah Sihanouk	1,522	93,836	1.62%	405	0.43%
Takeo	2,754	250,637	1.10%	55	0.02%
<b>Total</b>	<b>12,363</b>	<b>933,129</b>	<b>1.32%</b>	<b>2,663</b>	<b>0.29%</b>

\*MSM1: High risk MSM that are reachable

Based on high HIV prevalence and risk as reflected in the NPD, Cambodia concentrates on four priority provinces for HIV prevention. From three out of the four priority provinces the estimated proportions of MSM in Banteay Meanchey (2.14%), Battambang (1.59%) and Phnom Penh (2.79%) (but not Siem reap (0.87%) were retained for size estimations purposes. Among TGW only Banteay Meanchey (0.48%) was retained (table 18). The remaining and non-priority provinces were assigned average population proportions (MSM1, 1.32% and TGW, 0.29%; tables 18 and 19). Table 19 shows the population size estimates for MSM1 and TGW for all 25 provinces and the national level (2.14% for MSM and 0.36% for TGW). Based on consensus reached within the context of the Spectrum model working group, it is assumed that 25% of total MSM are hard to reach, also called MSM2. Hence, MSM1 proportion estimates presented in table 17 account for only 75% of the MSM population. The total MSM population size estimates for all provinces and at the national level can be computed by taking  $[(MSM1/75)*100]$ , as is

shown in table 17. The national MSM population size for 2023 is therefore estimated at 93,985 (70,489 MSM1 and 23,496 MSM2), and TGW 15,660 (table 17).

Table 18 Population size estimates among MSM and TGW by province and national level, 2023

Province	MSM PSE 2023				TGW PSE 2023		
	Male Population 15-49 yrs	% of MSM1	PSE MSM1	PSE MSM2	Total MSM	% of TGW	Total TGW
Banteay Meanchey	248,707	2.14%	5,321	1,774	7,095	0.48%	1,197
Battambang	285,017	1.59%	4,529	1,510	6,039	0.29%	813
Kampong Cham	250,672	1.32%	3,321	1,107	4,428	0.29%	715
Kampong Chhnang	146,561	1.32%	1,942	647	2,589	0.29%	418
Kampong Speu	247,054	1.32%	3,273	1,091	4,364	0.29%	705
Kampong Thom	192,134	1.32%	2,546	849	3,394	0.29%	548
Kampot	167,137	1.32%	2,214	738	2,953	0.29%	477
Kandal	337,984	1.32%	4,478	1,493	5,971	0.29%	965
Kep	12,242	1.32%	162	54	216	0.29%	35
Koh Kong	36,871	1.32%	489	163	651	0.29%	105
Kratie	108,479	1.32%	1,437	479	1,916	0.29%	310
Mondulkiri	27,455	1.32%	364	121	485	0.29%	78
Oddor Meanchey	81,002	1.32%	1,073	358	1,431	0.29%	231
Pailin	22,142	1.32%	293	98	391	0.29%	63
Phnom Penh	642,578	2.79%	17,922	5,974	23,895	0.69%	4,448
Preah Sihanouk	93,836	1.32%	1,243	414	1,658	0.29%	268
Preah Vihear	74,642	1.32%	989	330	1,319	0.29%	213
Prey Veng	289,833	1.32%	3,840	1,280	5,120	0.29%	827
Pursat	118,658	1.32%	1,572	524	2,096	0.29%	339
Rattanakiri	63,915	1.32%	847	282	1,129	0.29%	182
Siem Reap	289,100	1.32%	3,830	1,277	5,107	0.29%	825
Stung Treng	49,047	1.32%	650	217	866	0.29%	140
Svay Rieng	145,048	1.32%	1,922	641	2,562	0.29%	414
Takeo	250,637	1.32%	3,321	1,107	4,428	0.29%	715
Tbong Khum	219,733	1.32%	2,911	970	3,882	0.29%	627
<b>National</b>	<b>4,400,485</b>	<b>2.14%</b>	<b>70,489</b>	<b>23,496</b>	<b>93,985</b>	<b>0.36%</b>	<b>15,660</b>

## 6 Discussion

### 6.1 Findings of current IBBS

This report describes the results of the fourth round of IBBS among MSM and TGW in Cambodia. Previous rounds were held between 2010 and 2019. In the current IBBS, the overall HIV prevalence among MSM had increased to 5.5% (from 4.0% in 2019) and among TGW to 13.5% (from 9.6% in 2019). These results show that despite Cambodia's remarkable success in controlling the HIV epidemic among the general population, significant challenges remain in curtailing the spread of HIV in smaller population groups, such as MSM and TGW. At the present levels of new HIV infection, Cambodia will not be able to eradicate HIV from the country by 2025, to which it has committed to in its most recent national plans for HIV/AIDS [14, 15].

HIV prevalence among MSM and TGW varied widely across provinces, but it was consistently higher among TGW. Among MSM, the highest HIV prevalence was found in Sihanoukville (15.2%), followed by Phnom Penh (10.1%) and Banteay Meanchey (9.3%). Among TGW, HIV prevalence was highest in Banteay Meanchey (24.2%), followed by Phnom Penh (16.5%) and Sihanoukville (13.7%).

This high HIV prevalence is not an isolated phenomenon. HIV infection is known to be driven by a number of well-established risk factors and behaviors and it may be expected that these are present in our study population as well. Unsurprisingly, serological evidence for past or current syphilis infection was found to be common, often in combination with anogenital presence of NG and CT. Individual STI and their synergy have been firmly proven to increase the likelihood of HIV acquisition and transmission during unprotected sexual intercourse [23]. Both HIV and STI among MSM and TGW are predominantly transmitted through unprotected anal intercourse, which was commonly reported in this IBBS. Inconsistent condom use with a variety of different sexual partner types was also reported, more often than not in the absence of proven HIV chemoprophylaxis or PrEP [24]. On the positive side, recent HIV PrEP use was found independently and highly protective of newly identified HIV infection in our multivariate risk factor analysis. Two other factors that were highly associated with increased risk for newly identified HIV

infection were serological evidence of past or current syphilis infection and cohabitating with a sexual partner. Together, these three factors provide clear direction for the focus of future HIV prevention activities: promotion of HIV PrEP and STI control, especially in the context of domestic sexual partners. Use of dating apps to find sexual partners, although common, substance use, number of male sexual partners and condom use were not found independently associated with newly identified HIV infection, possibly as a result of collinearity with other factors.

Some other encouraging findings from the present survey were the increasing uptake recent HIV testing, HIV self-testing using oral fluid, HIV PrEP, and ARV treatment among those who tested HIV positive.

Another important finding from this IBBS is that HCV infection has now been introduced among MSM and TGW in Cambodia. HCV infection is predominantly transmitted sexually among MSM and TGW, although parenteral transmission may occur when needles and syringes are shared, for example during Chemsex or hormone administration. HCV can cause both acute and chronic hepatitis, ranging in severity from a mild illness to a serious, chronic disease with lethal outcomes such as liver cirrhosis and liver cancer [25, 26]. Direct-acting antiviral medicines can be used to cure more than 95% of persons with HCV, but access to screening, diagnosis and treatment needs to be assured.

Population size estimation using the service multiplier was successfully applied in this IBBS and produced estimates coherent with previous findings. Results were extrapolated to the national level, using more advanced methods. Nationally, the MSM population size for 2023 was estimated at 93,985 and TGW at 15,660. However, population sizes will only marginally change between consecutive rounds of IBBS, making repeated estimations redundant.

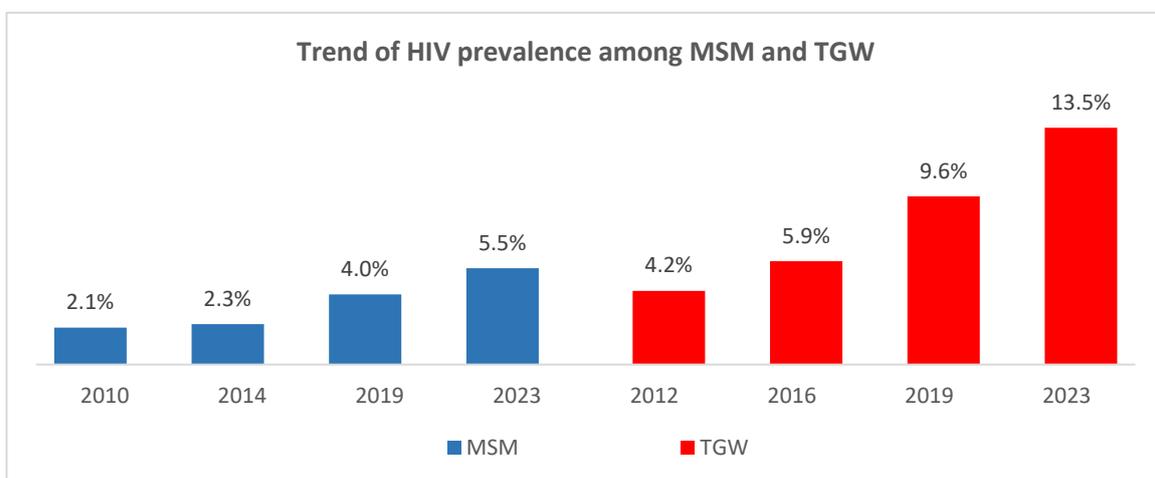
Finally, several measures of mental health, sexual coercion and other abuse were included in the present survey. Somewhat surprisingly, low levels of psychological distress, adverse childhood experiences, sexual coercion, drugging before sex and other forms of abuse were reported. Some of this may be due to underreporting associated with stigmatization and victimization of those subjected to sexual coercion and rape, especially in the context of a face-face interview using a standardized questionnaire. Given the

significance of these factors for the wellbeing of MSM and TGW, careful future monitoring is recommended.

## 6.2 Trends over time

Comparing the results of the present IBBS with those from previous rounds is important to assess any increases or decreases in its core results over time. To start with, HIV prevalence among MSM appeared to have increased from 2.1% in 2010, to 5.5% in 2023. Among TGW, the increase was even more pronounced. In this group, HIV prevalence increased from 4.2% in 2021 to 13.5% in 2023 (figure 15).

Figure 15 Trends in HIV prevalence among MSM and TGW included in IBBS, 2010-2023



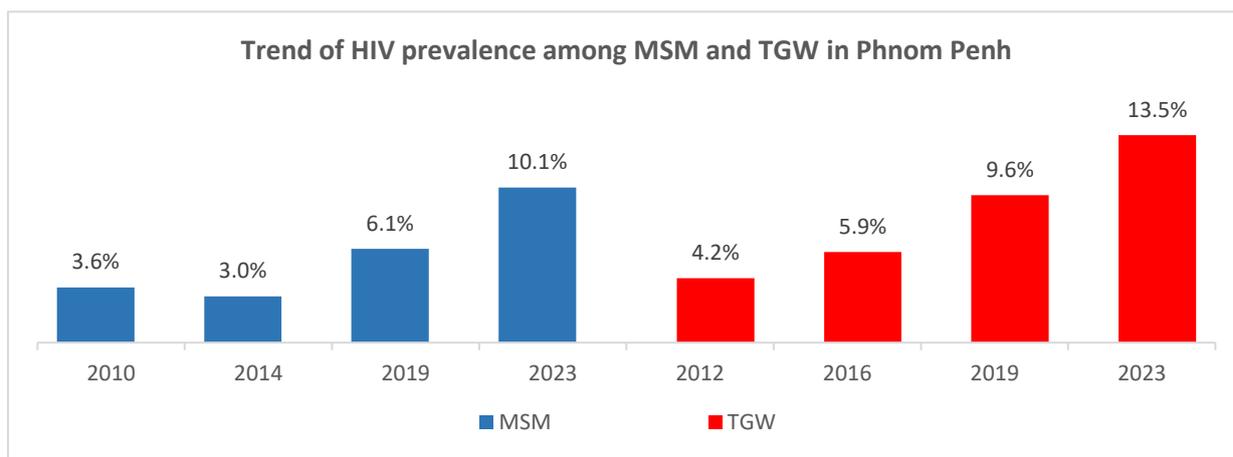
Note: Unweighted HIV prevalence for 2023, while the

Even though differences exist in study designs and methodologies used in these consecutive rounds of IBBS, the upward trend in HIV prevalence among MSM and TGW is clear.

Results from our multivariate risk factor analysis of newly identified HIV infection among IBBS participants provides some important clues for future HIV prevention priorities: increase HIV PrEP uptake and improve STI control, especially of syphilis infection, focusing on intimate relationships in the domestic setting.

Although national trends in HIV prevalence among MSM and TGW are informative, the local HIV epidemic situation may be very different. For example, among MSM in Phnom Penh HIV prevalence increased from 3.6% in 2010 to 10.1% in 2023. Among Phnom Penh TGW the increase in HIV prevalence was even more pronounced, from 5.8% in 2012 to 16.5% in 2023 (figure 16).

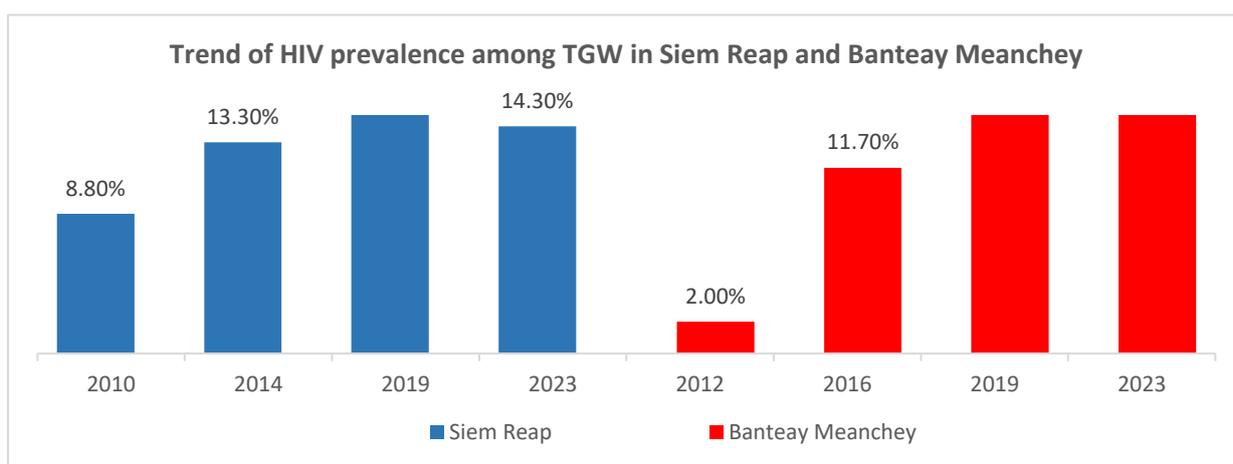
Figure 16 Trends in HIV prevalence among MSM and TGW in Phnom Penh, 2010-2023



Note: Unweighted HIV prevalence for 2023

Even though it may be expected for HIV prevalence to be higher in urban areas, other, possibly more severe, or differently shaped, sub-epidemics may be occurring in other geographical contexts. Figure 17 depicts trends in HIV prevalence among TWG in Siem Reap and Banteay Meanchey provinces from 2012 to 2023. Among Siem Reap TGW a bell-shaped epidemic pattern can be observed with HIV prevalence increasing from 8.8% in 2012 to 16.4% in 2019, followed by a decline to 14.3% in 2023. In Banteay Meanchey no flattening off is seen and the HIV prevalence continues to increase from 2.0% in 2012 to 24.2% in 2023 (figure 17).

Figure 17 Trend in HIV prevalence among TGW in Siem Reap and Banteay Meanchey, 2012 – 2023



Note: Unweighted HIV prevalence for 2023, the weight data available in [Appendix 1](#).

Analogous to the rising HIV prevalence, similar increases were seen in the prevalence of laboratory evidence of past or current syphilis infection and of anogenital presence of NG and CT infection from 2019 to 2023 (table 18). The strong increases in STI prevalence during the past 4 years are concerning. STI are well-established co-factors for HIV acquisition and transmission and their control is crucial to curb the spread of HIV infection among MSM and TGW.

*Table 19 Prevalence of syphilis (TPHA reactive), Neisseria gonorrhoea and Chlamydia trachomatis among MSM and TGW, 2019 – 2023*

	MSM		TGW	
	2019	2023	2019	2023
	n/N (%)	n/N (%)	n (%)	n/N (%)
<b>Syphilis</b>	96/1569 (8.1)	135/1440 (9.4)	160/1025 (15.6)	208/938 (22.2)
<b>NG</b>	63/1569 (4.0)	348/1412 (24.6)	57/1025 (5.6)	175/902 (19.4)
<b>CT</b>	112/1569 (7.1)	380/1412 (26.9)	94/1025(19.4)	211/902 (23.4)

Aside from diagnosis and treatment of STI as part of control efforts, promotion of prophylactic condom use remains essential. Compared to previous rounds IBBS, consistent condom use across different sexual partner types did not increase and continued to vary around 50%. While HIV PrEP may prevent HIV infection, it does not protect against other sexually transmitted pathogens, such as, but not limited to, syphilis, NG, and CT. Hence, screening, diagnosis, and treatment of STI should be an integrated part of all HIV related services, including HIV PrEP delivery.

### 6.3 Limitations

As with every investigation, our survey has several limitations. First of all, MSM and TGW are partially hidden and hard to reach population of which random sampling is not possible. As a result, our findings cannot be generalized to the population of MSM and TGW as a whole. Instead, it was opted to use RDS, a form of chain referral sampling, which was effective in enrolling almost 2400 participants in a four-month time period. A downside of RDS is that observations may not be totally independent, since participants refer each other into the survey and answers and other data may therefore be associated.

Recall bias and socially desirable answering are factors which may have introduced under- and overreporting bias during face-to-face interviewing. This may be particularly the case for behaviors that are stigmatized or illegal. For example, Chemsex and other drug use. The illegal nature of this behavior may explain why only a limited number of Chemsex users could be enrolled in our survey, even though other data suggest a much higher prevalence of this practice [27]. Finally, our analysis looked at risk factors for newly identified HIV infection, which may have preceded or followed the incidence of these infections. This may have negatively affected the accuracy of our observations and conclusions drawn in subsequent statistical analyses.

## 7 Summary

### 7.1 Recruitment, demographics, and population size estimation

From April to August 2023, 1440 MSM and 938 TGW were successfully enrolled from eight provinces. The RDS recruitment tool has proven efficient in signing up a relatively large number of participants in a short time. Participants were mostly young, had attended at least secondary school and had a relatively high income. Most MSM identified as male, while TGW mostly identified as female. TGW were slightly older than MSM. Self-reported bisexuality among MSM was common and MSM also reported more often to have ever been married. Despite targeted recruitment, only 48 Chemsex users could be enrolled. Use of the service list multiplier method estimated the population size of MSM in the eight provinces to be 42,637 and of TGW, 9,683.

### 7.2 HIV prevalence

Overall HIV prevalence among MSM was relatively low, but was higher in Sihanoukville, Phnom Penh and Banteay Meanchey. High HIV prevalence was found among TGW in all provinces and was highest in Banteay Meanchey. PrEP use during the past 12 months was found independently and highly protective of newly identified HIV infection, whereas laboratory evidence of past or current syphilis infection and cohabitating with a sexual partner were found independently associated with increased risk. From 2010 to 2023 HIV prevalence has continued to increase, specifically among MSM in Phnom Penh and among TGW in Siem Reap and Banteay Meanchey.

### 7.3 Sexually transmitted infections

Laboratory evidence of past or current syphilis infection was found relatively common among MSM, and more often among MSM in Phnom Penh and Sihanoukville. Among TGW such evidence was high in all provinces. From 2019 to 2023 past or current syphilis infection moderately increased among MSM but did sharply among TGW. Hepatitis C virus was found introduced in both populations, with prevalence

being higher among TGW. High prevalence of NG and CT were seen among MSM and TGW in all provinces; both had sharply increased from 2019 to 2023.

#### **7.4 Sexual behavior, substance use and HIV program coverage**

Consistent condom use was low across all sexual partner types. Use of alcohol was common, but TGW were less likely to smoke. A minority of MSM had engaged in illicit drug use; few reported having used Viagra or having engaged in Chemsex. HIV prevention program coverage was high, with a far majority reporting having had contact with an outreach worker and receiving condoms and lubes in the past year. About three quarters of MSM and TGW reported to have been tested for HIV infection, mostly during the past six months. Almost all who had tested positive said they were taking ARVs. Several MSM and TGW who reported to be HIV negative or had never been tested, had a positive HIV rapid test in IBBS (newly identified HIV infections). About a quarter of participants said to have ever self-tested for HIV, with almost all having received the self-test from an outreach worker. Most participants said to have heard about HIV PrEP, and about one-third said to have used PrEP in the past 12 months. Of these, more than 4 out of 5 were still taking PrEP at the time of the survey. The majority of MSM and TGW reported having had a sexual health checkup. STI symptoms during the past 12 months were reported by some, but more often so among MSM. Few were ever diagnosed with active syphilis, but almost all said to have been treated. More than half of MSM and TGW had recently been looking for sexual partners online; the most popular dating apps were Blued and Grinder, Telegram and Facebook the most popular social media. Of TGW, about one-fourth had ever used hormones, in majority birth-control pills obtained from a pharmacy.

#### **7.5 Sexual abuse and mental health**

Some MSM and TGW reported to have ever experienced of sex against their will, often multiple times and at a very young age. Fewer participants reported to have ever been drugged before sex. Both MSM and TGW had a low mean score on the Kessler psychological distress scale and the adverse childhood event scale.

## 8 Recommendations

Based on the findings as described above the following recommendations are made:

1. More targeted and inclusive HIV prevention services for TGW are urgently necessary.
2. A case control study among TGW in high HIV prevalence provinces is recommended to better understand and describe underlying factors driving the sharp increase.
3. PrEP delivery should be prioritized and include STI control services, both among MSM and TGW
4. STI testing and treatment (possibly presumptively) should be an intrinsic part of all clinic-based HIV services. More needs to be done to increase the awareness of the risks of STI for HIV transmission in the context of low condom use associated with PrEP and undetectable equal untransmissible (U=U).
5. HCV infection has been introduced among MSM and TGW and will likely continue to spread in the future. Standard screening for HCV infection is recommended.
6. Promotion of condom use needs to be intensified as part of all HIV and STI related services.
7. HIV testing, PrEP and ARV treatment services need to be maintained to increase and sustain correct knowledge of current HIV infection status and prevent further transmission and HIV related morbidity and mortality.
8. Substance use, especially Chemsex among MSM and TGW have been found strongly associated with HIV infection elsewhere. Efforts should be undertaken to deliver PrEP to Chemsex users. Monitoring of Chemsex and options for substance use prevention and treatment should be considered.
9. Additional measures, particularly of (self) stigma and discrimination, should be deliberated for inclusion in future IBBS or in stand-alone studies.

END OF REPORT

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## APPENDIX1: HIV Prevalence among MSM and TGW (Non-Weight Vs. Weight Data Analysis)

Province	MSM		TGW	
	Non-Weight	Weight	Non-Weight	Weight
Banteay Meanchey	9.27%	8.15%	24.16%	23.32%
Battambang	1.63%	1.1%	6.03%	4.68%
Kampong Cham	0.57%	0.33%	10.08%	10.51%
Kandal	2.43%	1.92%	9.68%	13.56%
Phnom Penh	10.11%	10.55%	16.53%	19.91%
Preah Sihanouk	15.17%	17.1%	12.73%	10.72%
Siem Reap	4.89%	5.13%	13.39%	8.71%
Takeo	1.1%	1.83%	11.86%	13.5%
<b>Total</b>	<b>5.49%</b>	<b>8.97%</b>	<b>13.54%</b>	<b>12.79%</b>

## APPENDIX2: Syphilis Prevalence among MSM and TGW (Non-Weight Vs. Weight Data Analysis)

Province	MSM		TGW	
	Non-Weight	Weight	Non-Weight	Weight
Banteay Meanchey	7.95%	6.28%	28.86%	28.85%
Battambang	5.98%	4.98%	26.72%	22.34%
Kampong Cham	3.41%	2.08%	18.49%	13.48%
Kandal	6.31%	5.37%	11.83%	8.52%
Phnom Penh	21.35%	20.59%	34.71%	35.63%
Preah Sihanouk	17.98%	20.33%	20%	17.39%
Siem Reap	11.41%	11.1%	24.11%	23.05%
Takeo	1.1%	1.28%	8.47%	8.02%
<b>Total</b>	<b>9.38%</b>	<b>11.76%</b>	<b>22.17%</b>	<b>16.7%</b>

## APPENDIX3: HCV Prevalence among MSM and TGW (Non-Weight Vs. Weight Data Analysis)

Province	MSM		TGW	
	Non-Weight	Weight	Non-Weight	Weight
Banteay Meanchey	1.32%	1.03%	5.37%	5.09%
Battambang	-	-	-	-
Kampong Cham	-	-	1.68%	1.88%
Kandal	0.49%	0.18%	2.15%	0.75%
Phnom Penh	1.69%	1.03%	2.48%	2.28%
Preah Sihanouk	0.56%	0.38%	0.91%	0.43%
Siem Reap	-	-	3.57%	2.42%
Takeo	-	-	-	-
<b>Total</b>	<b>0.49%</b>	<b>0.25%</b>	<b>2.13%</b>	<b>1.45%</b>

**APPENDIX4: Chlamydia Trachomatis (CT) Prevalence among MSM and TGW  
(Non-Weight Vs. Weight Data Analysis)**

Province	MSM		TGW	
	Non-Weight	Weight	Non-Weight	Weight
Banteay Meanchey	18.12%	21.54%	16.67%	17.05%
Battambang	53.3%	52.25%	43.1%	43.74%
Kampong Cham	33.71%	35.49%	17.65%	17.39%
Kandal	30.73%	29.75%	30.11%	29.52%
Phnom Penh	25.84%	24.83%	21.49%	18.85%
Preah Sihanouk	15.38%	15.2%	11.49%	9.43%
Siem Reap	21.98%	18.35%	37.27%	35.89%
Takeo	13.19%	13.51%	10.17%	7.67%
<b>Total</b>	<b>26.93%</b>	<b>21.84%</b>	<b>23.39%</b>	<b>17.32%</b>

**APPENDIX5: Neisseria Gonorrhoea (NG) Prevalence among MSM and TGW (Non-Weight Vs. Weight Data Analysis)**

Province	MSM		TGW	
	Non-Weight	Weight	Non-Weight	Weight
Banteay Meanchey	18.12%	14.82%	12.32%	13.16%
Battambang	53.3%	15.52%	16.48%	10.65%
Kampong Cham	33.71%	32.32%	33.14%	15.79%
Kandal	30.73%	36.91%	40.98%	38.46%
Phnom Penh	25.84%	30.79%	29.78%	24.17%
Preah Sihanouk	15.38%	18.15%	21.3%	14.49%
Siem Reap	21.98%	26.18%	24.73%	28.47%
Takeo	13.19%	13.03%	13.74%	6.47%
<b>Total</b>	<b>26.93%</b>	<b>21.91%</b>	<b>24.66%</b>	<b>13.98%</b>

## ANNEX 1 Questionnaire

Section 0: Questionnaire Parameters			
No.	Questions and filters	Coding categories	Skip to
q0_1	What population is this person sampled for?	Men Who Have Sex with Men (1) Transgender Women (2)	
q0_2	In which province is this survey being implemented?	Banteay Meanchey (1) Battambang (2) Kampong Cham (3) Phnom Penh (4) Preah Sihanouk (5) Siem Reap (6) Kandal (7) Takeo (8)	
q0_3	Please enter Interviewer Code	_ _ _ _ _ _ _	Cascade by province
q0_4	Please scan Seed code	_ _ _ _ _ _ _	
q0_5	Please scan QR code of participant	_ _ _ _ _ _ _	

Section 1: Sociodemographic Characteristics			
No.	Questions and filters	Coding categories	Skip to
Now I would like to ask you some questions related to your personal information.			
q1_1	Do you consider yourself male, female, transgender, or other?	Male (1) Female (2) Transgender (3) Other (4) Don't Know (98) Refuse to Answer (99)	
q1_2	What was your biological sex assigned at birth?	Male (1) Female (2) Other (3) Don't Know (98) Refuse to Answer (99)	2 → Excluded/End
q1_3	How would you describe your sexual orientation?	Gay/Homosexual (1) Bisexual (2) Straight/Heterosexual (3) Other (4) Don't Know (98) Refuse to Answer (99)	
q1_4	How old were you at your latest birthday?	Age in Completed Year: [   ] Min: 15 Don't Know (98) Refuse to Answer (99)	≥15
q1_5	How many years of school have you completed now?	Number of years.....  (No school: 0)	

q1_6	What is your current marital status?	Married and living together (1) Married, but not living together (2) Separated / Divorced (3) Not married, not living with a partner (4) Not married, but living with a female partner (5) Not married, but living with a male partner (6) Not married, but living with a TGW partner (7) Don't Know (98) Refuse to Answer (99)	
q1_7	Are you currently living with a sexual partner?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
q1_8	In which province do you currently live?	Banteay Meanchey (1) Battambang (2) Kampong Cham (3) Kampong Chhnang (4) Kampong Speu (5) Kampong Thom (6) Kampot (7) Kandal (8) Kep (9) Koh Kong (10) Kratie (11) Monduliri (12) Oddar Meanchey (13) Pailin (14) Phnom Penh (15) Preah Sihanouk (16) Preah Vihear (17) Prey Veng (18) Pursat (19) Ratanakiri (20) Siem Reap (21) Stung Treng (22) Svay Rieng (23) Takéo (24) Tboung Khmum (25) Don't Know (98) Refuse to Answer (99)	
q1_9	How long have you lived in this province?  Type '0' if less than 1 month	# Months, Years [   ], [   ] Don't Know (98) Refuse to Answer (99)	
q1_10	What is your current job?	Hairdresser / Barber / Beautician (1) Government Officer (2)	

	[Multiple responses possible]	Laborer (Factory, Construction) (3) Seller (4) Entertainment Worker (5) Sex Worker (6) Student (7) NGO Staff (8) Private Company Staff (9) Farmer / Fisherman (10) Artist (11) Wedding beautician (12) Casino (13) Other, _____. (14) Don't Know (98) Refuse to Answer (99)	
q1_11	In the past 6 months, on average, how much money did you make per month?  (Exchange rate: 4000 riels per 1 US\$)	Amount in US Dollars [       ] Min: 0000 Max: 9997 Don't Know (9998) Refuse to Answer (9999)	

Section 2: Transgender Identity and Expression			
No.	Questions and filters	Coding categories	Skip to
	You mentioned in the previous set of questions that you identify as a female or transgender woman. I would now like to ask some questions pertaining to this  Skip entire section, unless Q1.3 (DESEXNOW) = '3' Transgender OR 1.3(DESEXNOW) = '2' Female, 4 'other' and 1.1 (DESEXBTH) equals '1' Male OR 0.1 (KEYPOP) = '2' Transgender women		
q2_1	How often do you express yourself or dress as a woman?	All the time (1) Often (2) Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q2_2	What type of hormones have you used?  <i>Check All That Apply</i>	None (1) Injection (2) Hormone gel (3) Birth control pills (4) Hormone pills (5) Hormone patch (6) Other, _____. (7) Don't Know (98) Refuse to Answer (99)	1 → Q2_9
Q2_3	Where did you get these hormones? <i>Check All That Apply</i>	Pharmacy (1) Private clinic (2) NGO's Clinic (3) Public Hospital (4) Friends (5) Other, _____. (6) Don't Know (98) Refuse to Answer (99)	

Q2_4	In the past six months, how often did you get hormone injections?	Never (1) Once A Month (2) Once A Week (3) At Least Once A Day (4) Don't Know (98) Refuse to Answer (99)	1 → q2_8 98 → q2_8 99 → q2_8
Q2_5	In the past six months, with how many people did you use a needle after someone else had injected hormones with it?	# People [   ] Min: 0 Max: 97 Don't Know (98) Refuse to Answer (99)	
Q2_6	In the past six months, who injected you with hormones?  <i>Check all that apply</i>	Injected by myself (1) Injected by Skilled Personnel (Health care provider...) (2) Injected by Non-Skilled Personnel (Friend...) (3) Other, _____. (4) Don't Know (98) Refuse to Answer (99)	
Q2_7	Where did you get the needles and syringes?	Pharmacy (1) Private clinic (2) NGO's Clinic (3) Public Hospital (4) Friends (5) Other, _____. (6) Don't Know (98) Refuse to Answer (99)	
Q2_8	Does a health care provider know about or supervise your use of hormones?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
q2_9	Have you ever had a blood test to check your hormone levels?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
q2_10	Other than hormones, have you had gender enhancement/or sex reassignment surgery?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2 → q3_1 98 → q3_1 99 → q3_1
Q2_11	What type of procedures did you have?	Breast implants (injections) (1) Breast implants (not injections) (2) Vaginoplasty (creation of a vagina out of the penis and scrotum) (3) Implants (not injections) in any other part of the body (buttocks, hips, etc.) (4) Surgery to change the voice (5) Facial feminization surgery (chin, jawline, forehead, Adam's apple removal, etc.) (6) Other .....(7) Do not know (98) No answer (99)	

### Section 3. Sexual History

The next few questions are about your lifetime sexual history. This includes vaginal and anal sex. With vaginal sex, we mean a penis enters a vagina. With anal sex we mean a penis enters a person's anus (butt). **First, we will ask you some questions about your sexual experiences with women.**

No.	Questions and filters	Coding categories	Skip to
Q3_1	Have you ever had vaginal sex? By vaginal sex we mean your penis enters a woman's vagina.	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q3_2	Have you ever had anal sex with a woman? By anal sex we mean you put your penis into a woman's anus (butt)	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q3_3	In the past <b>6 months</b> , with how many different women have you had vaginal or anal sex?	# Women [       ] Min: 1 Don't Know (9998) Refuse to Answer (9999)	
Q3_4	In the past <b>3 months</b> , with how many different women have you had vaginal or anal sex?	# Women [       ] Min: 1 Don't Know (9998) Refuse to Answer (9999)	
<b>Now we will ask you about your sexual experience with TG women</b>			
Q3_5	How you ever had anal sex with a TGW woman?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q3_8
Q3_6	In the past <b>6 months</b> , with how many different TG women have you had anal sex?	# TG Women [       ] Min: 0 Don't Know (9998) Refuse to Answer (9999)	
Q3_7	In the past <b>3 months</b> , with how many different TG women have you had anal sex?	# TG Women [       ] Min: 0 Don't Know (9998) Refuse to Answer (9999)	
<b>Now we will ask you about your sexual experience with men</b>			
Q3_8	Have you ever had anal sex with a man?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q4_1
Q3_9	In the past <b>6 months</b> , with how many men have you had anal sex?	# Men [       ] Min: 0 Don't Know (9998) Refuse to Answer (9999)	
Q3_10	In the past <b>3 months</b> , with how many men have you had anal sex?	# Men [       ] Min: 0 Don't Know (9998) Refuse to Answer (9999)	

**Section 4. Recent Sexual Behavior**

The next section is about your sexual behavior in the past 6 months. The questions are about different sex partners, how many times you had sex, and condom use. With sex we mean either vaginal or anal sex. We will ask you about different sex partner types: main sex partners, casual sex partners, people you gave money, goods, or drugs for sex, and people who gave you money, goods, or drugs for sex. Each person you have had sex within the past 6 months should be counted in one of these categories.

No.	Questions and filters	Coding categories	Skip to
Q4_1	<p>First, we will ask you about any main male sex partners you may have had anal sex with during the past 6 months.</p> <p>A main sex partner is someone you are committed to, for example your spouse, live-in sex partner, or boyfriend.</p> <p><b>In the past 6 months, with how many different main male partners did you have anal sex?</b></p>	<p># Men [   ] Min: 01 Max: 20 Don't Know (98) Refuse to Answer (99)</p>	If 0, go to Q4_7
Q4_2	<p>The latest time you had anal sex with your main male partner, did you have receptive or insertive anal sex?</p> <p>Receptive anal sex is when he puts his penis in your anus (butt) and insertive anal sex is when you put your penis in his anus (butt)</p>	<p>Receptive (1) Insertive (2) Both (3) Don't Know (98) Refuse to Answer (99)</p>	
Q4_3	<p>The latest time you had anal sex with a main male partner, did you or your partner use a condom?</p>	<p>Yes (1) No (2) Don't Know (98) Refuse to Answer (99)</p>	1 → q4_5
Q4_4	<p>What was the main reason for not using a condom the latest time you had anal sex with a main male partner?</p> <p><i>Only one response possible</i></p>	<p>We are in a relationship (1) He did not have HIV/STI (2) I was drunk or high on drugs (3) Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7) Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)</p>	
Q4_5	<p>In the <b>past 6 months</b>, how often did you or your partners use condoms when you had anal sex with your main male partners?</p>	<p>Always (1) Most of the Time (2) Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)</p>	

Q4_6	Where do you usually meet new main male partners?	No new main male partner (0) Parks (1) Streets (2) Bars/Discotheques/Cafes (3) Beer Gardens/Restaurants (4) Massage Parlors (5) Karaoke Bars (6) Online or Mobile Dating Apps (7) Guesthouse / Hotel (8) Workplace / School (9) Other _____ (10) Don't Know (98) Refuse to Answer (99)	
Q4_7	<p>The next questions are about casual partners you may have had anal sex within the past 6 months.</p> <p>A casual male partner is a man you have had anal sex with but don't feel committed to. There is no payment of money, goods, or drugs for sex with these partners.</p> <p><b>In the past 6 months, with how many different casual male partners did you have anal sex?</b></p>	# Men [     ] Min: 1 Max: 100 Don't Know (998) Refuse to Answer (999)	0 → q4_1 3
Q4_8	<p>The latest time you had anal sex with your casual male partner, did you have receptive or insertive anal sex?</p> <p>Receptive anal sex is when he puts his penis in your anus (butt) and insertive anal sex is when you put your penis in his anus (butt)</p>	Receptive (1) Insertive (2) Both (3) Don't Know (98) Refuse to Answer (99)	
Q4_9	The latest time you had anal sex with a <b>casual male partner</b> , did you or your partner use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1 → q4_1 1
Q4_10	<p>What was the main reason for not using a condom the latest time you had anal sex with a <b>casual male partner</b>?</p> <p><i>Only one response possible</i></p>	We are in a relationship (1) He did not have HIV/STI (2) I was drunk or high on drugs (3) Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7) Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)	
Q4_11	In the past 6 months, how often did you or your partners use	Always (1) Most of the Time (2)	

	condoms when you had anal sex with <b>casual male partners</b> ?	Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q4_12	Where do you usually meet new <b>casual male partners</b> ?	No new casual male partners (0) Parks (1) Streets (2) Bars/Discotheques/Cafes (3) Beer Gardens/Restaurants (4) Massage Parlors (5) Karaoke Bars (6) Online or Mobile Dating Apps (7) Guesthouse / Hotel (8) Workplace / School (9) Other _____ (10) Don't Know (98) Refuse to Answer (99)	
Q4_13	The next questions are about buying sex with money, goods, or drugs. <b>In the past 6 months, how many different men did you give money, goods, or drugs in exchange for anal sex?</b>  Type '0' if none	# Men Money  __ __  Goods  __ __  Drug  __ __  Min: 0 Max: 100 Don't Known (998) Refuse to Answer (999)	All 0 → q4_1 9
Q4_14	The latest time you had anal sex with any male you gave money, goods, or drugs for sex, did you have receptive or insertive anal sex?  Receptive anal sex is when he puts his penis in your anus (butt) and insertive anal sex is when you put your penis in his anus (butt)	Receptive (1) Insertive (2) Both (3) Don't Know (98) Refuse to Answer (99)	
Q4_15	The latest time you had anal sex with any male you gave money, goods, or drugs for anal sex, did you or your partner use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1 → q4_1 7
Q4_16	What was the main reason for not using a condom the latest time you had anal sex with a male you gave money, goods, or drugs for sex?  <i>Only one response possible</i>	We are in a relationship (1) He did not have HIV/STI (2) I was drunk or high on drugs (3) Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7) Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)	
Q4_17	<b>In the past 6 months</b> , how often did you or your partners use	Always (1) Most of the Time (2)	

	condoms when you had anal sex with men you gave money, goods, or drugs for sex?	Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q4_18	Where do you usually meet new men you give money, goods, or drugs for anal sex?	No new men you gave money, goods, or drugs (0) Parks (1) Streets (2) Bars/Discotheques/Cafes (3) Beer Gardens/Restaurants (4) Massage Parlors (5) Karaoke Bars (6) Online or Mobile Dating Apps (7) Guesthouse / Hotel (8) Workplace / School (9) Other _____ (10) Don't Know (98) Refuse to Answer (99)	
Q4_19	Now we will ask about getting money, goods, or drugs for anal sex. <b>In the past 6 months, how many different men gave you money, goods, or drugs for anal sex?</b>  Type '0' if none	# Men Money  __ __  Goods  __ __  Drug  __ __  Min: 0 Max: 100 Don't Know (998) Refuse to Answer (999)	All 0 → q4_2 5
q4_20	The latest time you had anal sex with any male who gave you money, goods, or drugs for sex, did you have receptive or insertive anal sex? Receptive anal sex is when he puts his penis in your anus (butt) and insertive anal sex is when you put your penis in his anus (butt)	Receptive (1) Insertive (2) Both (3) Don't Know (98) Refuse to Answer (99)	
Q4_21	The latest time you had anal sex with any male who gave you money, goods, or drugs for anal sex, did you or your partner use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1 → q4_2 3
Q4_22	What was the main reason for not using a condom the last time you had anal sex with a man who gave you money goods, or drugs for sex?  <i>Only one response possible</i>	We are in a relationship (1) He did not have HIV/STI (2) I was drunk or high on drugs (3) Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7) Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)	
Q4_23	In the past 6 months, how often did you or your partners use	Always (1) Most of the Time (2)	

	condoms when you had anal sex with men who gave you money, goods, or drugs for sex?	Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q4_24	Where do you usually meet new men, who gave you money, goods, or drugs for anal sex?	No new men, who gave you money, goods, or drugs (0) Parks (1) Streets (2) Bars/Discotheques/Cafes (3) Beer Gardens/Restaurants (4) Massage Parlors (5) Karaoke Bars (6) Online or Mobile Dating Apps (7) Guesthouse / Hotel (8) Workplace / School (9) Other _____ (10) Don't Know (98) Refuse to Answer (99)	
Q4_25	<p>The next questions are about any TG women sex partners you may have had.</p> <p>First, we will ask you about any main TG women sex partners you may have had anal sex with in the past 6 months.</p> <p>A main sex partner is someone you are committed to, for example your spouse, live-in sex partner, or boy/girlfriend?</p> <p><b>In the past 6 months, with how many different main TG women partners did you have anal sex?</b></p> <p>Type '0' if none</p>	<p># TG Women [   ] Min: 0 Max: 20 Don't Known (98) Refuse to Answer (99)</p>	<p>0 → q4_3 1</p>
Q4_26	The latest time you had anal sex with your main TG woman partner, did you have receptive or insertive anal sex? Receptive anal sex is when she puts her penis in your anus (butt) and insertive anal sex is when you put your penis in her anus (butt)	Receptive (1) Insertive (2) Both (3) Don't Know (98) Refuse to Answer (99)	
Q4_27	The latest time you had anal sex with a main TG woman partner, did you or your partner use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1 → q4_29
Q4_28	What was the main reason for not using a condom the latest time you had anal sex with a main TG woman partner?	We are in a relationship (1) She did not have HIV/STI (2) I was drunk or high on drugs (3) Condom was not available (4) Sex feels better without a condom (5)	

	<i>Only one response possible</i>	<p>I am HIV positive (6)</p> <p>Since I penetrated, I thought there was no risk (7)</p> <p>Partner refused (8)</p> <p>Other _____ (9)</p> <p>Don't Know (98)</p> <p>Refuse to Answer (99)</p>	
Q4_29	<b>In the past 6 months</b> , how often did you or your partners use condoms when you had anal sex with your main TG woman partners?	<p>Always (1)</p> <p>Most of the Time (2)</p> <p>Sometimes (3)</p> <p>Rarely (4)</p> <p>Never (5)</p> <p>Don't Know (98)</p> <p>Refuse to Answer (99)</p>	
Q4_30	Where do you usually meet new main TG women sex partners?	<p>No new main TG women partners (0)</p> <p>Parks (1)</p> <p>Streets (2)</p> <p>Bars/Discotheques/Cafes (3)</p> <p>Beer Gardens/Restaurants (4)</p> <p>Massage Parlors (5)</p> <p>Karaoke Bars (6)</p> <p>Online or Mobile Dating Apps (7)</p> <p>Guesthouse / Hotel (8)</p> <p>Workplace / School (9)</p> <p>Other _____ (10)</p> <p>Don't Know (98)</p> <p>Refuse to Answer (99)</p>	
Q4_31	<p>The next questions are about casual partners you may have had anal sex with in the last 6 months.</p> <p>A casual TG woman partner is a TG woman you have had anal sex with but don't feel committed to. There is no payment of money, goods, or drugs for anal sex with these partners.</p> <p><b>In the past six months, with how many different casual TG women partners did you have anal sex?</b></p> <p>Type '0' if none</p>	<p># TG Women</p> <p>[     ]</p> <p>Min: 0</p> <p>Max: 100</p> <p>Don't Known (998)</p> <p>Refuse to Answer (999)</p>	<p>0 → q4_3</p> <p>7</p>
Q4_32	The latest time you had anal sex with your casual TG woman partner, did you have receptive or insertive anal sex? Receptive anal sex is when she puts her penis in your anus (butt) and insertive anal sex is when you put your penis in her anus (butt)	<p>Receptive (1)</p> <p>Insertive (2)</p> <p>Both (3)</p> <p>Don't Know (98)</p> <p>Refuse to Answer (99)</p>	
Q4_33	The latest time you had anal sex with a casual TG woman partner, did you or your partner use a condom?	<p>Yes (1)</p> <p>No (2)</p> <p>Don't Know (98)</p> <p>Refuse to Answer (99)</p>	1 → q4_35
Q4_34	What was the main reason for not using a condom the latest time	<p>We are in a relationship (1)</p> <p>She did not have HIV/STI (2)</p>	

	<p>you had anal sex with a casual TG woman partner?</p> <p><i>Only one response possible</i></p>	<p>I was drunk or high on drugs (3)  Condom was not available (4)  Sex feels better without a condom (5)  I am HIV positive (6)  Since I penetrated, I thought there was no risk (7)  Partner refused (8)  Other _____ (9)  Don't Know (98)  Refuse to Answer (99)</p>	
q4_35	<p>In the past 6 months, how often did you or your partners use condoms when you had anal sex with casual TG women partners?</p>	<p>Always (1)  Most of the Time (2)  Sometimes (3)  Rarely (4)  Never (5)  Don't Know (98)  Refuse to Answer (99)</p>	
Q4_36	<p>Where do you usually meet new casual TG women sex partners?</p>	<p>No new casual TG women partners (0)  Parks (1)  Streets (2)  Bars/Discotheques/Cafes (3)  Beer Gardens/Restaurants (4)  Massage Parlors (5)  Karaoke Bars (6)  Online or Mobile Dating Apps (7)  Guesthouse / Hotel (8)  Workplace / School (9)  Other _____ (10)  Don't Know (98)  Refuse to Answer (99)</p>	
Q4_37	<p>The next questions are about buying sex with money, goods, or drugs. <b>In the last 6 months, how many different TG women did you give money, goods, or drugs in exchange for anal sex?</b></p> <p>Type '0' if none</p>	<p># TG women  Money [     ]  Goods [     ]  Drugs [     ]  Min: 0  Max: 100  Don't Known (998)  Refuse to Answer (999)</p>	<p>All  0 → q4_4  3</p>
Q4_38	<p>The latest time you had anal sex with any TG women you gave money, goods, or drugs for sex, did you have receptive or insertive anal sex? Receptive anal sex is when she puts her penis in your anus (butt) and insertive anal sex is when you put your penis in her anus (butt)</p>	<p>Receptive (1)  Insertive (2)  Both (3)  Don't Know (98)  Refuse to Answer (99)</p>	
Q4_39	<p>The latest time you had anal sex with any TG woman you gave money, goods, or drugs for sex, did you or your partner use a condom?</p>	<p>Yes (1)  No (2)  Don't Know (98)  Refuse to Answer (99)</p>	<p>1 → q4_41</p>
Q4_40	<p>What was the main reason for not using a condom the latest time you had anal sex with a TG</p>	<p>We are in a relationship (1)  She did not have HIV/STI (2)  I was drunk or high on drugs (3)</p>	

	woman you gave money, goods, or drugs for sex?  <i>Only one response possible</i>	Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7) Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)	
Q4_41	In the past 6 months, how often did you use condoms when you had anal sex with TG women you gave money, goods, or drugs for sex?	Always (1) Most of the Time (2) Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q4_42	Where do you usually meet new TG women you give money, goods, or drugs for sex?	No new TG women you give money or goods (0) Parks (1) Streets (2) Bars/Discotheques/Cafes (3) Beer Gardens/Restaurants (4) Massage Parlors (5) Karaoke Bars (6) Online or Mobile Dating Apps (7) Guesthouse / Hotel (8) Workplace / School (9) Other _____ (10) Don't Know (98) Refuse to Answer (99)	
Q4_43	Now we will ask about getting money, goods, or drugs for anal sex. <b>In the past six months, how many different TG women gave you money or goods for anal sex?</b>  Type '0' if none	# TG Women [     ] Min: 0 Max: 100 Don't Known (998) Refuse to Answer (999)	0 → q4_49
q4_44	The latest time you had anal sex with any TG woman who gave you money, goods, or drugs for sex, did you have receptive or insertive anal sex? Receptive anal sex is when she puts her penis in your anus (butt) and insertive anal sex is when you put your penis in her anus (butt)	Receptive (1) Insertive (2) Both (3) Don't Know (98) Refuse to Answer (99)	
q4_45	The latest time you had anal sex with any TG woman who gave you money, goods, drugs for sex, did you or your partner use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1 → q4_47
Q4_46	What was the main reason for not using a condom the latest time you had anal sex with a TG	We are in a relationship (1) She did not have HIV/STI (2) I was drunk or high on drugs (3)	

	woman who gave you money, goods, or drugs for sex?  <i>Only one response possible</i>	Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7) Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)	
q4_47	In the past 6 months, how often did you or your partners use condoms when you had anal sex with TG women who gave you money, goods, or drugs for sex?	Always (1) Most of the Time (2) Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q4_48	Where do you usually meet new TG women who give you money, goods, or drugs for sex?	No new TG women who give you money or goods (0) Parks (1) Streets (2) Bars/Discotheques/Cafes (3) Beer Gardens/Restaurants (4) Massage Parlors (5) Karaoke Bars (6) Online or Mobile Dating Apps (7) Guesthouse / Hotel (8) Workplace / School (9) Other _____ (10) Don't Know (98) Refuse to Answer (99)	
Q4_49	The next questions are about any female sex partners you may have had.  First, we will ask you about any female main sex partners you had anal or vaginal sex with during the past 6 months.  A main sex partner is someone you are committed to, for example your spouse, live-in sex partner, or boy/girlfriend?  <b>In the past 6 months, with how many different main female partners did you have anal or vaginal sex?</b>  Type '0' if none	# Females [   ] Min: 0 Max: 20 Don't Know (98) Refuse to Answer (99)	0→q4_5 3
Q4_50	The latest time you had vaginal sex with a female main partner, did you use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1→q4_52

q4_51	<p>What was the main reason for not using a condom the latest time you had vaginal sex with a main female partner?</p> <p><i>Only one response possible</i></p>	<p>We are in a relationship (1)  she did not have HIV/STI (2)  I was drunk or high on drugs (3)  Condom was not available (4)  Sex feels better without a condom (5)  I am HIV positive (6)  Since I penetrated, I thought there was no risk (7)  Partner refused (8)  Other _____ (9)  Don't Know (98)  Refuse to Answer (99)</p>	
Q4_52	<p>In the past 6 months, how often did you use condoms when you had vaginal sex with main female partners?</p>	<p>Always (1)  Most of the Time (2)  Sometimes (3)  Rarely (4)  Never (5)  Don't Know (98)  Refuse to Answer (99)</p>	
Q4_53	<p>The next questions are about female casual partners you may have had anal or vaginal sex within the past 6 months.</p> <p>A female casual partner is a woman you have had sex with but don't feel committed to. There is no payment of money, goods, or drugs for sex with these partners.</p> <p><b>In the past six months, with how many different casual female partners did you have anal or vaginal sex?</b>  Type '0' if none</p>	<p># Females  [     ]  Min: 0  Max: 100  Don't Know (998)  Refuse to Answer (999)</p>	<p>0 → q4_57</p>
Q4_54	<p>The latest time you had vaginal sex with any casual female partner, did you use a condom?</p>	<p>Yes (1)  No (2)  Don't Know (98)  Refuse to Answer (99)</p>	<p>1 → q4_56</p>
Q4_55	<p>What was the main reason for not using a condom the latest time you had vaginal sex with a casual female partner?</p> <p><i>Only one response possible</i></p>	<p>We are in a relationship (1)  she did not have HIV/STI (2)  I was drunk or high on drugs (3)  Condom was not available (4)  Sex feels better without a condom (5)  I am HIV positive (6)  Since I penetrated, I thought there was no risk (7)  Partner refused (8)  Other _____ (9)  Don't Know (98)  Refuse to Answer (99)</p>	
Q4_56	<p>In the past 6 months, how often did you use condoms when you had vaginal sex with casual female partners?</p>	<p>Always (1)  Most of the Time (2)  Sometimes (3)  Rarely (4)  Never (5)</p>	

		Don't Know (98) Refuse to Answer (99)	
Q4_57	The next questions are about buying sex with money, goods, or drugs. <b>In the past six months, how many different females did you give money, goods, or drugs in exchange for anal or vaginal sex?</b>  Type '0' if none	# Females Money [     ] Goods [     ] Drugs [     ] Min: 0 Max: 100 Don't Know (998) Refuse to Answer (999)	All 0→q4_6 1
Q4_58	The latest time you had vaginal sex with any female you gave money, goods, or drugs for sex, did you use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1→q4_60
Q4_59	What was the main reason for not using a condom the latest time you had vaginal sex with a female you gave money, goods, or drugs for sex?  <i>Only one respond</i>	We are in a relationship (1) she did not have HIV/STI (2) I was drunk or high on drugs (3) Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7) Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)	
Q4_60	In the past 6 months, how often did you use condoms when you had vaginal sex with females you gave money, goods, or drugs for sex?	Always (1) Most of the Time (2) Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q4_61	Now we will ask about getting money, goods, or drugs for sex. In the last six months, how many different females gave you money, goods, or drugs for anal or vaginal sex?  Type '0' if none	# Females Money [     ] Goods [     ] Drugs [     ] Min: 0 Max: 100 Don't Know (998) Refuse to Answer (999)	All 0→q4_6 7
q4_62	The latest time you had vaginal sex with any female who gave you money, goods, or drugs for sex, did you use a condom?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1→q4_64
q4_63	What was the main reason for not using a condom the latest time you had vaginal sex with a female who gave you money, goods, or drugs for sex?  <i>Only one response possible</i>	We are in a relationship (1) she did not have HIV/STI (2) I was drunk or high on drugs (3) Condom was not available (4) Sex feels better without a condom (5) I am HIV positive (6) Since I penetrated, I thought there was no risk (7)	

		Partner refused (8) Other _____ (9) Don't Know (98) Refuse to Answer (99)	
Q6_64	In the past 6 months, how often did you use condoms when you had vaginal sex with females who gave you money, goods, or drugs for sex?	Always (1) Most of the Time (2) Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
Q6_65	Did you ever have anal sex with any of your female partners (your penis enters the anus of your female partner)	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q6_66	On these occasions how often did you use a condom?	Always (1) Most of the Time (2) Sometimes (3) Rarely (4) Never (5) Don't Know (98) Refuse to Answer (99)	
<p><b>Some people use lubricants during vaginal or anal sex. With vaginal sex we mean a penis enters a vagina. With anal sex we mean a penis enters a person's anus.</b></p> <p><b>Lubricants make your penis or your partner's penis more slippery and easier to insert into the vagina or anus. Lubricants also prevent the condom from breaking.</b></p> <p><b>Now we will ask you some questions about using lubricants in the last 6 months. Unlike previous questions, these questions are not specific to certain type of partners.</b></p>			
Q4_67	In the past 6 months, which lubricant did you use during vaginal or anal sex?  Check All That Apply	Water-based Lube, KY Jelly, Vendome (1) Saliva (2) Vaseline, Pomade or Other Petroleum Jelly Product (3) Body Lotion, Shea Nut Butter, or Baby Oil (3) Cooking Oil, Mayonnaise, Butter, or Margarine (4) Other (5) Never used (6) Don't Know (98) Refuse to Answer (99)	
Q4_68	In this past 3 months, from where or whom did you receive water-based lubricants?  Check all that apply	Did not Receive (0) Friends/outreach workers (1) Condom peer sale representatives (2) Pharmacies/drug stores/clinics (3) Condom outlets (4) Marts/mini-mart (5) Groceries (6) Hotels/guesthouses (7) Sex Partner (8) Other (specify.....) (9) Don't Know (98) Refuse to Answer (99)	0 → q4_7 0

Q4_69	In this past 3 months, from where or whom did you receive condoms?  Check all that apply	Did not Receive (0) Friends/outreach workers (1) Condom peer sale representatives (2) Pharmacies/drug stores/clinics (3) Condom outlets (4) Marts/mini-mart (5) Groceries (6) Hotels/guesthouses (7) Sex Partner (8) Other (specify.....) (9) Don't Know (98) Refuse to Answer (99)	
<b>Now we will ask you some questions about your experience with unwanted sex.</b>			
Q4_70	Have you ever had sex against your will?	Ever (1) Never (2) Don't Know (98) Refuse to Answer (99)	2, 98, 99 → q4_73
Q4_71	How often did this occur?	Number of times [ ] [ ] [ ]	
Q4_72	How old were you when this first happened?	Age [ ] [ ]	
Q4_73	Have you ever been given drugs before sex to make you incapable or unconscious to express your will?	Ever (1) Never (2) Don't Know (98) Refuse to Answer (99)	2, 98, 99 → q5_1
Q4_74	How often did this occur?	Number of times [ ] [ ] [ ]	
Q4_75	How old were you when this first happened?	Age [ ] [ ]	

<p><b>Section 5: Now we will ask some questions about drinking alcohol. We will use some standard measurements when discussing the amount of alcohol consumed.</b></p> <p>The standard measurements are:</p> <ul style="list-style-type: none"> <li>○ A can/glass of beer, fermented palm juice (285 ml)</li> <li>○ A glass of wine (120 ml)</li> <li>○ A glass of whiskey with soda or cola</li> </ul>			
No.	Questions and filters	Coding categories	Skip to
q5_1	How often do you have a drink containing alcohol?	Never (1) Monthly or Less (2) 2-4 Times a Month (3) 2-3 Times a Week (4) 4 or More Times a Week (5) Don't Know (98) Refuse to Answer (99)	1 → q5_4
q5_2	In the past 3 months, how many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2-drinks (1) 3 or 4 drinks- (2) 5 or 6 drinks- (3) 7 to 9-drinks (4) 10 or more drinks (5) Don't Know (98) Refuse to Answer (99)	

q5_3	On one occasion, how often do you have six or more drinks?	Never (1) Less Than Monthly (2) Monthly (3) Weekly (4) Daily or Almost Daily (5) Don't Know (98) Refuse to Answer (99)	
Q5_4	Did you ever smoke cigarettes (including electronic cigarettes)	Yes (1) No (2)	2→q5_6
Q5_5	If yes, how many (electronic) cigarettes did you smoke per day in the past 6 months?  <b>Note: One electronic smoking event is one cigarette</b>	Less than 1 (1) 1 (2) 2-5 (3) 6-10 (4) 11-15 (5) One pack (6) More than one pack (7) I stopped smoking (8)	
<b>Did you ever use any of the following drugs? (Show photos of drugs on tablet)</b>			
Q5_6	Inhaled nitrites ( <i>Poppers</i> )	Yes (1) No (2)	
Q5_7	Marijuana ( <i>Ganja</i> )	Yes (1) No (2)	
Q5_8	Viagra or a similar drug to get an erection	Yes (1) No (2)	
Q5_9	Amphetamine tablets ( <i>Yaa baa, yaa maa</i> )	Yes (1) No (2)	
Q5_10	Methamphetamine tablets ( <i>meth, tina</i> )	Yes (1) No (2)	
Q5_11	Crystal methamphetamine ( <i>Ice, crystal meth</i> )	Yes (1) No (2)	
Q5_12	Ecstasy ( <i>Yaa E</i> )	Yes (1) No (2)	
Q5_13	Ketamine ( <i>Yaa K</i> )	Yes (1) No (2)	
Q5_14	GHB or GBL ( <i>G</i> )	Yes (1) No (2)	
Q5_15	Mephedrone ( <i>M-cat, meow, salts</i> )	Yes (1) No (2)	
<b>Section 6: Chemsex is the use of drugs for sexual pleasure.</b>			
Q6_1	Do you have any experience with Chemsex?  If yes or if you were approached to take part in this survey because of your experience with Chemsex,	Yes (1) No (2)	2→q7_1

	please answer the following questions. If you have no Chemsex experience, skip to section 4 of the interview.		
Q6_2	When was the latest Chemsex event in which you took part?	__ __ __  Number of months ago [ ] [ ] Number of days ago	
<b>When you had Chemsex during the past 12 months which of the following drugs did you use (more than one answer possible)</b>			
Q6_3	Amphetamine tablets ( <i>Yaa baa, yaa maa</i> )	Yes (1) No (2)	
Q6_4	Methamphetamine tablets ( <i>Meth, tina</i> )	Yes (1) No (2)	
Q6_5	Crystal methamphetamine ( <i>Ice, crystal meth</i> )	Yes (1) No (2)	
Q6_6	Ecstasy ( <i>Yaa E</i> )	Yes (1) No (2)	
Q6_7	Ketamine ( <i>Yaa K</i> )	Yes (1) No (2)	
Q6_8	GHB or GBL (G)	Yes (1) No (2)	
Q6_9	Mephedrone ( <i>M-cat, meow, salts</i> )	Yes (1) No (2)	
Q6_10	If you used any of these drugs and had anal intercourse during the past 12 months, how often did you use condoms on that occasion (from the start to finish of the anal intercourse)?	Always (1) Almost always (2) Half of the time (3) Some of the time (4) Never (5) Did not have intercourse (6)	
Q6_11	If you used any of these drugs while you had sex during the past 12 months, how often did you have group sex (sex with 3 or more people, including yourself)?	Always (1) Almost always (2) Half of the time (3) Some of the time (4) Never (5)	
Q6_12	If you used any of these drugs and had anal intercourse during the past 12 months, how often did you use Viagra or a similar drug to help you getting or maintaining an erection?	Always (1) Almost always (2) Half of the time (3) Some of the time (4) Never (5)	
Q6_13	If you used any of these drugs while you had anal sex during the past 12 months, did you also use Poppers or Ganja?	Poppers (1) Ganja (2) Both (3) None (4)	
Q6_14	If you used any of these drugs and had anal intercourse during the past 12 months, how often were you a top (insertive), a bottom (receptive) or took both sexual positions?	Top (1) Bottom (2) Both (3) Did not have intercourse (4)	

Q6_15	During the past 12 months did you ever inject crystal meth (slamming) before or during you had sex or to increase your sexual pleasure?	Yes (1) No (2)	
Q6_16	If you injected crystal meth into yourself in the past 12 months, how often did you use your own clean injection equipment?	Always (1) Almost always (2) Half of the time (3) Some of the time (4) Never (5)	
Q6_17	Have you ever exhaled the crystal meth smoke from your lungs into the mouth and lungs of another user?	Ever (1) Never (2)	
Q6_18	In the past 12 months, how many Chemsex partners did you meet through social media or the internet?	[ ] [ ] [ ]	
Q6_19	In the past 12 months, how many Chemsex events did you attend?	[ ] [ ] [ ]	
Q6_20	During the latest Chemsex event you joined, with how many men did you have sex?	[ ] [ ] [ ]	
Q6_21	Did you ever have sex against your will during any of the Chemsex events you attended?	Never (1) Ever (2)	
Q6_22	Have you ever been drugged (brought under the influence of drugs without your consent) before or during a Chemsex event?	Never (1) Ever (2)	

Section 7. STI Symptoms and HIV Testing			
Thank you. Now we will ask you a few questions about your sexual health, including previous HIV testing.			
No.	Questions and filters	Coding categories	Skip to
Q7_1	How many months ago was your latest visit to a STD clinic for a sexual health check-up?  Note: If < 1 months ago, enter 1	# Months [ ] [ ] Min: 1 Max: 12 Over a year ago (13) Never (97) Don't Known (98) Refuse to Answer (99)	97 → q7 _3

Q7_2	What type of clinic did you visit for your latest sexual health check-up?	Family Health Clinic, Hospital, or Health Center (1) NGO Clinic (2) Private Clinic (3) Other _____(4) Don't Known (98) Refuse to Answer (99)	
Q7_3	In the past 12 months, have you had an abnormal discharge from your penis?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q7_4	In the past 12 months, have you had an ulcer or sore on or near your penis?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q7_5	In the past 12 months, have you had an ulcer or sore on or near your anus?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q7_6	In the past 12 months, have you had pain during urination?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q7_7	The latest time you had any of these symptoms, where did you <b>first</b> go for treatment?  (Select only 1 option)	Pharmacy (1) Private Clinic, Hospital (2) Public Hospital, STI Clinic (3) NGO Clinic, Hospital (4) Traditional Healer (5) Didn't get Treatment (6) Other _____ (7) Don't Know (98) Refuse to Answer (99)	Show if: Q7_3=1 or Q7_4=1 or Q7_5=1 or Q7_6=1
Q7_8	Have you been diagnosed with active syphilis by the health professional?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	1 → q7_12
Q7_9	How long ago did it happen?  Note: If < 1 month, enter 1	[ ] [ ] [ ] Number of months ago	
Q7_10	Have you received treatment?	Yes (1) No (2)  Not necessary, already treated (3)  Don't Know (98) Refuse to Answer (99)	
Q7_11	Where did you receive treatment	Pharmacy (1) Private Clinic, Hospital (2) Public Hospital, STI Clinic (3) NGO Clinic, Hospital (4) Traditional Healer (5) Didn't get Treatment (6) Other _____ (7)	

		Don't Know (98) Refuse to Answer (99)	
<b>We will now ask you a few questions about HIV and HIV testing. Remember that your responses will be kept confidential and will not be shared with anyone.</b>			
Q7_12	Have you ever tested for HIV?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q8_ 1
Q7_13	When did you have your latest test for HIV?	In the past 6 Months (1) Between 7-12 Months Ago (2) More than 12 Months Ago (3) Don't Know (98) Refuse to Answer (99)	
Q7_14	Where did you have your most recent HIV test?	Private clinic (1) Public Hospital (2) NGO clinic (3) NGO Outreach Worker (4) Self test (5) Other: _____(6) Don't Know (98) Refuse to Answer (99)	
Q7_15	What was the result of your latest test?	Positive (1) Negative (2) Unclear- Neither Positive or Negative (3) Did Not Receive Result (4) Don't Know (98) Refuse to Answer (99)	2→q8_ 1 or 99→q8 _1
Q7_16	Are you currently taking ARVs?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q8_ 1 99→q8 _1
Q7_17	Can you tell me the main reason why you are not currently taking ARVs? <i>Only one response possible</i>	Clinic Too Far, Transport Costs Too high (1) Costs of Clinic Too High (2) Poor Service at Clinic (3) Clinic Ran Out of ARVs (4) Feel Healthy (5) Too Many Side Effects (6) Receiving Traditional Treatment (7) Afraid of Discrimination (8) Don't Know (98) Refuse to Answer (99)	
Q7_18	Where do you receive ARVs?	Public Clinic (1) Private Hospital (2) NGO Clinic (3) Pharmacy (4) Other _____ (5) Don't Know (98) Refuse to Answer (99)	
Q7_19	In the past week (7 days), how many doses of ARV did you miss?	# Doses Missed [   ] Min: 0 Max: 14 Don't Known (98) Refuse to Answer (99)	

Section 8. Exposure to HIV Interventions			
No.	Questions and filters	Coding categories	Skip to
We will now ask you about services that peer educators or outreach workers may have given you. A peer educator is someone like you who has been trained in HIV. An outreach worker is someone employed by an organization, government, or private agency, who might provide the same services to people like you.			
q8_1	Has a peer educator or outreach worker ever talked to you about HIV?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q8_5
q8_2	How (latest time) long ago did a peer educator or outreach worker talk to you about HIV?	In the past 30 Days (1) In the past 3 Months (2) In the past Year (3) Longer than a year ago (4) Don't Know (98) Refuse to Answer (99)	
q8_3	The latest time you met with a peer educator or outreach worker, what <b>items or things</b> did you receive?  Check All That Apply	Nothing (1) Condoms (2) Lubricant (3) Pamphlet or Brochure (4) Medicines (5) Other _____. (6) Don't Know (98) Refuse to Answer (99)	
q8_4	The latest time you met with a peer educator or outreach worker, what <b>services</b> did you receive?  Check All That Apply	Nothing (1) HIV Testing (2) Training on Condom Use (3) Counseling on Risk (4) Referral (5) HIV self-test (6) PrEP services (7) Other _____. (6) Don't Know (98) Refuse to Answer (99)	
q8_5	In the past 3 months, has a peer educator or outreach worker from either KHANA, RHAC, MHC or MHSS interacted with you?  Check All That Apply	Yes, Khana (1) Yes, RHAC (2) Yes, MHC (3) Yes, MHSS (4) No (5) Don't Know (98) Refuse to Answer (99)	
Q8_6	In the past 3 months did you get an HIV test or received an HIV self-test kit from KHANA, RHAC, MHC or MHSS ?	Yes (1) No (2) Don't Know (98) Refuse to answer (99)	
q8_7	In the past 3 months, how often did you use online health information and services (including HIV) developed for people like you (e.g. Facebook, websites)?	Never (1) Occasionally (<once a month) (2) Sometimes (a few times/months) (3) Frequently (a few times/week) (4) Every day (5) Don't Know (98) Refuse to Answer (99)	
<b>PrEP</b>			

prep1	Have you ever heard about PrEP?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→Pre p7
Prep2	How did you hear about PrEP	Online (Website... )(1) From outreach worker or peer educator (CBOs) (2) Pharmacies (3) Public hospital (4) NGO clinic (5) Page kapeakh (6) Others (Please specify): _____(6) Don't Know (98) Refuse to Answer (99)	
Prep3	Have you ever used PrEP in the past 12 months?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Prep4	How did you receive PrEP? (Multiple choices possible)	Bought it online (1) Received through CBOs (2) Bought at Pharmacies/ From doctor or clinic (3) Public hospital (4) NGO clinic (5) Page kapeakh (6) Others (Please specify): _____(6) Don't Know (98) Refuse to Answer (99)	
Prep5	Are you still using PrEP?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→Pre p7
Prep6	Why do you stop using PrEP? Multiple answers possible	Clinic Too Far, Transport Costs Too high (1) Costs of Clinic Too High (2) Poor Service at Clinic (3) Clinic Ran Out of PrEP (4) Feel Healthy/think that i'm not at risk (5) Too Many Side Effects (6) Afraid of Discrimination (7) Forget to get PrEP (8) Use condom (9) Don't Know (98) Refuse to Answer (99)	
Prep7	Would you want to learn more about PrEP, if made it accessible to you?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
<b>HIVST</b>			
Hivst1	Have you ever tested for HIV using a self-test kit either oral fluid test (OraQuick) or finger-prick?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q9_ 1
Hivst2	How did you hear about HIV self-testing	Online (Website... )(1)	

	Check all that apply	From outreach worker or peer educator (CBOs) (2) Pharmacies (3) Public hospital (4) NGO clinic (5) Page kapeakh (6) Page KhmerTest.org (7) Others (Please specify): _____(6) Don't Know (98) Refuse to Answer (99)	
Hivst3	How did you obtain your most recent HIV self-testing kit?	Oral fluid test (OraQuick) received through outreach workers (1) OraQuick test ordered through online (2) Finger-prick self-test bought from Pharmacies (3) Finger-prick self- test ordered through online (4) Others (Please specify): _____(5) Don't Know (98) Refuse to Answer (99)	

Section 9. Internet Use			
No.	Questions and filters	Coding categories	Skip to
<b>Now I am going to ask you a few questions about using the internet and mobile apps to find others like you.</b>			
q9_1	In the past 3 months, how often did you use online services to find sexual partners (Facebook, dating websites, etc.)?	Never (1) Occasionally (<once a month) (2) Sometimes (a few times/months) (3) Frequently (a few times/week) (4) Every day (5) Don't Know (98) Refuse to Answer (99)	
q9_2	What dating apps or websites do you use at least once a month?  Select All That Apply	Blued (1) Grinder (2) Hornet (3) Jack'd (4) Tinder (5) AdamAdam (6) Romeo (7) Scruff (8) Wechat (9) (Tweeter) (10) (VK_dating app) (11) Facebook (12) Telegra (13) Baddo (14) Line (15) Tan Tan (16) Bingo (17) Not use (18) Other..... (19) Don't know (98) Not response (99)	

Section 11. Mental Health			
No.	Questions and filters	Coding categories	Skip to
Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks.			
K1	Did you feel tired out for no good reason?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K2	Did you feel nervous?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K3	Did you feel so nervous that nothing could calm you down?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K4	Did you feel hopeless?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K5	Did you feel restless or fidgety?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K6	Did you feel restless you could not sit still?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K7	Did you feel depressed?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K8	Did you feel so sad that nothing could cheer you up?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K9	Did you feel that everything was an effort?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	
K10	Did you feel worthless?	Never (1) A little of the time (2) Some of the time (3) Most of the time (4) All the time (5)	

<b>Section 12. Adverse childhood experiences (ACEs)</b>
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	When I was growing up...		
Q11_1	I have been hit, slapped, kicked, or received physical punishment from a parent or other adult guardian.	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q11_2	People in my family have said hurtful or insulting things to me.	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q11_3	Someone has tried to touch me or make me touch them in a sexual way, make me do or watch sexual things, or actually did something sexual with me.	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q11_4	There has been someone to take care of me, protect me, and take me to medical care when I get sick.	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Q11_5	There has been someone in my family who helped me feel that I was loved and important.	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	
Thank you. Now some questions about how other people have treated you. Please remember that your answers are confidential.			
Q11_6	In the past 12 months, has anyone ever physically hurt you such as hit or choke you, or threatened you with a knife or other weapon?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q11_8
Q11_7	The latest time this has happened, what was your relationship to the person who did any of these things to you? If it was more than one person, what was the relationship with the person who started the violence in the most recent time this happened?	Paying Sex Partner (1) Non-Paying Sex Partner (2) Parent (3) Other Family Member, Relative (4) Friend, Co-Worker or Acquaintance (5) Police, Military, or Authority Figure (6) Stranger (7) Other _____. (8) Don't Know (98) Refuse to Answer (99)	
Q11_8	In the past 12 months, has anyone tricked you, lied to you, or threaten you to make you have sex with them when you didn't want to?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	2→q11_10
Q11_9	The latest time this has happened, what was your relationship to the person who did any of these things to you?	Paying Sex Partner (1) Non-Paying Sex Partner (2) Parent (3) Other Family Member, Relative (4) Friend, Co-Worker, or Acquaintance (5) Police, Military, or Authority Figure (6) Stranger (7) Other _____. (8) Don't Know (98) Refuse to Answer (99)	
Q11_10	In the past 12 months, has anyone verbally yelled at you, insult you, intimate or scare you on purposes?	Yes (1) No (2) Don't Know (98) Refuse to Answer (99)	

Q11_11	The latest time this has happened, what was your relationship to the person who did any of these things to you?	Paying Sex Partner (1) Non-Paying Sex Partner (2) Parent (3) Other Family Member, Relative (4) Friend, Co-Worker or Acquaintance (5) Police, Military, or Authority Figure (6) Stranger (7) Other _____. (8) Don't Know (98) Refuse to Answer (99)	2→End
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Section 13. Conclusion			
No.	Questions and filters	Coding categories	Skip to
q13_1	Thank you very much for answering these questions. Let us repeat that your answers are totally confidential and there is no way anyone will learn what you told us		