



Mapping and Size Estimation of Key Populations and HIV Risk Behaviors in Bangladesh - 2023



Department of Public Health and Informatics
Bangabandhu Sheikh Mujib Medical University



AIDS/STD Programme

Report on

Mapping and Size Estimation of HIV Key Populations and HIV Risk Behaviors in Bangladesh 2023

**AIDS/STD Programme (ASP)
Directorate General of Health Services
Ministry of Health and Family Welfare**

Study Conducted by



**Department of Public Health and Informatics
Bangabandhu Sheikh Mujib Medical University
Dhaka, Bangladesh**

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Message from the Director General of Health Services



I am pleased to share the report on the "Mapping and Size Estimation of HIV Key Populations and HIV Risk Behaviors in Bangladesh 2023" This report is a culmination of extensive efforts and contributions from numerous individuals and organizations, all of whom are dedicated to the cause of eliminating HIV/AIDS and ensuring an effective national response. I want to extend my heartfelt gratitude to the leadership of the AIDS/STD Programme (ASP) under Directorate General of Health Services (DGHS) and Bangabandhu Sheikh Mujib Medical University (BSMMU) for spearheading this critical survey.

I must acknowledge the pivotal role played by the members of key populations who actively participated in this surveillance. Their commitment, from identifying spots to providing vital information for estimating the population size at these spots and responding to inquiries. I also wish to thank our colleagues from the government and development partners for their unwavering support in conducting this scientifically rigorous study. I also thank the World Health Organization (WHO) and the United Nations Joint Program on HIV and AIDS (UNAIDS) for supporting this study. We sincerely thank all our partners, entities, and stakeholders for their unwavering support throughout this journey.

Special recognition goes to the members of the Advisory Committee, Technical Working Group (TWG), and Technical Working Committee (TWC) for their substantial contributions, which have significantly contributed to the success of this study.

The "Mapping and Size Estimation" report for 2023 will be a valuable resource for reflecting the estimation of key populations and understanding their risk behaviors. Let us continue our collective efforts to strive toward the goal of ending AIDS by 2030 in our country. Together, we can make a difference.

Prof. Dr. Abul Bashar Mohammed Khurshid Alam

Director General

Directorate General of Health Services (DGHS)

Ministry of Health and Family Welfare (MoHFW)

Message from the Line Director



Mapping and Size Estimation of Key Populations, including People Who Inject Drugs (PWID), Female Sex Workers (FSW), Male Sex Workers (MSW), Men who have sex with men (MSM), and Hijra, constitutes a comprehensive study demanding rigorous methodologies. Our dedicated colleagues from the AIDS/STD Programme (ASP) and Bangabandhu Sheikh Mujib Medical University (BSMMU) have undertaken this extensive endeavor to combat HIV/AIDS in Bangladesh. The culmination of their exhaustive work is encapsulated in the report titled "Mapping and Size Estimation of HIV Key Populations and HIV Risk Behaviors in Bangladesh 2023" which was executed from January to March 2023.

MSE 2023 encompassed data collection in 22 districts, with subsequent extrapolation to 44 additional districts, resulting in a comprehensive estimation of Key Populations across all 64 districts. The diligent efforts of the study team led them to visit approximately 4,400 spots, conducting observations and Spot-level Key Informant Interviews to derive estimates for Key Population numbers. Geographic Information System (GIS) data was also collected to create district-specific Spot Maps, facilitating a nuanced understanding of spot concentrations to inform intervention design. In addition to collecting and analyzing behavioral data, this report gains richness by heightening the behavioral aspects of Key Populations.

The AIDS/STD Programme (ASP) wishes to extend sincere appreciation to our diverse range of national and international development partners, as well as other ministries and departments, bilateral and multilateral organizations, UN agencies, international and national NGOs, CSOs, CBOs, networks, and Self-Help Groups of Key Populations. Their unwavering support has been invaluable throughout the project's duration. Special gratitude is reserved for WHO and UNAIDS, whose technical assistance, quality assurance, and financial backing were pivotal in conducting MSE 2023 and finalizing this comprehensive report.

Dr. Md. Mahafuzer Rahman Sarker

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'Mapping and Size Estimation of HIV Key Populations and HIV Risk Behaviors in Bangladesh 2023' stands as a demonstration to the collaborative efforts and contributions of numerous individuals and organizations, both national and international. We extend our heartfelt gratitude to the dedicated participants who generously shared their time and insights, making this survey possible.

We sincerely appreciate the AIDS/STD Programme of the Directorate General of Health Services, Ministry of Health & Family Welfare, Government of the People's Republic of Bangladesh, for entrusting us with the complex task of conducting MSE 2023. This endeavor involved diverse and mixed methodologies, and we are deeply thankful for the unwavering support of our implementing partners and co-implementers, including Save the Children in Bangladesh, icddr,b, CARE Bangladesh, Dhaka Ahsania Mission, Bandhu Social Welfare Society, Padakhep Manabik Unnayan Kendra, PIACT Bangladesh, Ashokta Punarbhashan Sangstha, Mukto Akash Bangladesh, and Badhan Hijra Sangha.

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Project Director & Principal Investigator

Mapping and Size Estimation of HIV Key Populations and HIV Risk Behaviors in Bangladesh 2023
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Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
ASP	AIDS/STD Programme
BBFSW	Brothel Based Female Sex Worker
BSMMU	Bangabandhu Sheikh Mujib Medical University
BMI	Body Mass Index
CBOs	Community-Based Organizations
CLs	Community Liaisons
DGHS	Directorate General of Health Services
DIC	Drop-in-Center
DNC	Department of Narcotics Control
FSW	Female Sex Workers
FRAs	Field Research Assistants
GD	Group Discussion
HIV	Human Immunodeficiency Virus
HBFSW	Hotel Based Female Sex Worker
HNPSF	Health, Nutrition and Population Sector Program
HRGs	High-Risk Groups
IBBS	Integrated Biological and Behavioral Survey
KIIs	Key Informant Interviews
KPs	Key Populations
M&E	Monitoring and Evaluation
MoHFW	Ministry of Health and Family Welfare
MSM	Men who have Sex with Men
MSW	Male Sex Workers
NASC	National AIDS/STD Control
NAC	National AIDS Committee
NCD	Non-communicable Disease
NGOs	Non-government Organizations
PLHIV	People Living with HIV
MSE	Mapping and Size Estimation
PWID	People Who Inject Drug
RBFSW	Residence Based Female Sex Worker
RFA	Rapid Field Assessment
SHGs	Self-help Groups
STIs	Sexually Transmitted Infections
SBFSW	Street Based Female Sex Worker
UNAIDS	United Nations Joint Program on HIV and AIDS
UNODC	The United Nations Office on Drugs and Crime
WHO	World Health Organization
YKPs	Young Key Populations

Executive Summary

The Government of Bangladesh is committed to limit the prevalence of HIV and sexually transmitted infections (STIs) among key populations (KPs) at a low level. The current mapping, size estimation, and behavioral survey was conducted among the KP groups, namely, female sex workers (FSW), men who have sex with men/male sex workers (MSM/MSW), and people who inject drugs (PWID). Regular updates of the estimated KP size and their mapping are important for planning, priority setting, designing effective interventions, resource allocation, and monitoring.

The objectives of this study were to: a) estimate the size and map the sites of KP groups including YKPs in selected districts and extrapolate the data to estimate the size in remaining districts; b) assess HIV-related risk behaviors, HIV services, sexual history, and prevalence of STIs among KPs.; c) understand the knowledge of KPs on HIV and their health-seeking behaviors; and d) assess the situation on violence against KPs, COVID-19 experiences, and HIV/STI risk perception.

To estimate the size of KP groups (FSWs, MSM/MSWs, PWIDs, and Hijra) in Bangladesh, the study used the community-led approach as decided by the technical committee. Data for size estimation were primarily collected from 22 (out of 64) districts. The districts were selected proportionately after clustering all 64 districts into six clusters based on the estimated KP size of the 2015-2016 survey, HIV vulnerability, and having an international border.

Before data collection on KP size, locations and spots in all selected districts (n=22) were mapped through group discussions and key informant interviews (KIIs) with the stakeholders at district levels and locations, respectively. The data collection team identified all the spots in the locations and collected data based on the numeric estimates (not by counting the KPs) provided by at least three key informants (such as the KPs themselves, pimps, shop owners, or rickshaw pullers, etc.) at each spot. The data were then compiled and adjusted for mobility, frequency, and hidden population factors to compute two estimates for each KP group for the selected districts separately: one is the minimum estimate (adjusted only for the mobility factor), and the other is the point estimate (adjusted for all three factors). After estimating the KP size for the selected districts, the proportion of each KP in the total population of the district (from the census data) was calculated (considering the 15-49-year-old female population for FSWs and 15-49-year-old male population for other KPs). Finally, the average of these proportions was calculated and used to estimate the population size for the unmapped districts according to clusters through extrapolation and stakeholder consultation workshops. The KP size estimated by the community-led approach was independently validated by a team using the capture-recapture (in 4 districts) and multiplier (in 2 districts) methods.

Regarding the size estimation of Hijra, in 2022, the government (DGHS) estimated the size of the Hijra population for the whole country. The current study collected data from 13 districts to estimate the size of this population. This study data was then compared with the data collected by the government (from the same 13 districts) using the Bland-Altman plot for validation (agreement). Since this study's data agreed well with the government's estimates, it was considered that the size of the Hijra population estimated by the government is still valid for the current estimate.

For the behavioral survey, a cross-sectional study with mixed methods was designed to collect information from all KP groups from January to March 2023. Data were collected from the same spots (in 22 districts) from which mapping data for size estimation were collected. In total, data from 1,963 KPs (FSW: 827; PWID: 271; and MSM/MSW: 865) were collected through face-to-face interviews using a separate pre-tested questionnaire appropriate for each KP group. Qualitative data on violence

against KPs, sexual behaviors, utilization of services, etc. from all KP groups were collected through in-depth interviews.

Estimated size of Key Populations

The estimated size of KP groups along with the typology is summarized in the following table.

Type of Key Population	Minimum estimate	Point estimate
Total Female Sex Workers (FSWs)	51568	113106
Residence-based FSWs (RBFSWs)	16198	47828
Street-based FSWs (SBFSWs)	24400	37629
Hotel-based FSWs (HBFSWs)	7488	24167
Brothel-based FSWs (BBFSWs)		3482
Hijra		12,629
Men who have sex with men (MSM)	39784	116498
Male sex worker (MSW)	27957	48694
People who inject drugs (PWID)	25751	34370

Risk behaviors of KP groups

Female sex workers

Data were collected from 827 female sex workers (FSWs) who sold sex for money or goods within 12 months before data collection. The mean age of FSWs was 31 (SD 7.0) years, and 80% of them were more than 24 years old. Overall, more than a quarter (27%) of FSWs did not attend any school. School attendance was higher among the younger age groups. About a fifth (22%) were currently married, and more than half (54%) were divorced, separated, or widowed.

Half of FSWs were engaged in commercial sex work before the age of 20. On average, FSWs served 23 clients a week. Overall, more than a quarter (27%) of FSWs did not use a condom during last sex with their clients. The use of a condom during the last sex was the lowest (only 42%) among the brothel-based FSWs. About a quarter (27%) reported having symptoms of sexually transmitted infections (STIs). The prevalence of STI symptoms was highest among RBFSWs (44.0%) and those who were less than 20 years of age (34%). The majority (94%) of FSWs received services from health facilities for STI symptoms.

Overall, 88% of FSWs had information about HIV testing facilities, and the majority (83%) of them were tested for HIV at least once in their lifetime. The majority (84%) of FSWs had an HIV test within a year before data collection, which was highest among brothel-based FSWs (100%) and lowest among residence-based FSWs (60%).

Men who have sex with men/male sex workers (MSM/MSWs)

Data were collected from 865 MSM/MSW (381 MSM and 484 MSWs). The mean age (overall) of the respondents was 26 years, and more than half (55%) were aged above 25 years. Overall, 9% did not have any education. About 1 in 5 (19%) of the respondents were married, and half of them were living with their partners.

About 33% of MSM had their first sex before the age of 15. Two-thirds (66%) reported having sex during the last six months, and 32% of them had anal sex with a male partner in exchange for money. About 70% reported that they used condoms during their last anal sex with a male commercial partner. More than a quarter (28.0%) had anal sex within the last month with a male sex partner in exchange for money, and about half (54%) reported using a condom during their last anal sex. A few (8%) of them also had sex with Hijras last month in exchange for money, and the majority (76%) used

condoms in the last sex. More than half (58%) of MSM had sex with casual male/Hijra partners in the last 6 months, and 63% used condoms in their last sex. Only a few (4%) reported that they had anal sex with casual female sex partners and 73% used condoms in the last sex.

About three-fourths (71%) of MSWs sold sex to males last week, and 60% had anal sex more than five times in the last week. About two-thirds (65%) used condoms in the last anal sex. About 3 in 4 (77.0%) and a few (5%) reported having sex with casual male partners and casual female partners last month, respectively. Sixty-three percent used condoms in their last sex with a casual male partner, while 41% used condoms in their last sex with a casual female partner.

About 17% of MSM and 25% of MSWs had STI symptoms during the last 12 months and received treatment (64% MSM and 75% MSW) from hospitals (13%), DICs (48%), private clinics (13%), and pharmacies (5%). Overall, 81% (78% MSM and 84% MSW) were aware of HIV testing facilities, and 65% (62% MSM and 67% MSW) were tested for HIV in the last 12 months, and almost everyone (99%) received the HIV test results. The most typical place for HIV testing was the DICs (92%).

People with Injecting Drug Use (PWID)

Data were collected from 271 PWIDs, who injected drugs for non-medical purposes within the last six months before data collection. The mean age of the PWIDs was 39 years, and more than 97% were older than 24 years. About a quarter did not have any education, and 72% were currently married. Among those who were married, about two-thirds were living with their spouse. The majority (91%) started using drugs after the age of 20. About half (50.9%) of the PWIDs had been using drugs for more than 10 years. The frequency of drug use was once a day (52.0%) and 2-3 times a day (45%). Only 40% did not share needles last week.

About three-fourths of the respondents had sex in the last month, 65% with their regular partners and 45% with commercial sex workers. The use of condoms during last sex in the last month was 39% with the regular partner and 72% with the commercial sex workers. A small proportion (9%) of the regular partners also injected drugs. About one in five (22%) respondents reported having STI symptoms during the last 12 months, and 71% received treatment either from hospitals (19%), DIC/Outlets (31%), pharmacies (21%), or private doctors (12%). About three-fourths (69%) had information about the HIV testing facilities. The overwhelming majority (93%) were tested for HIV, while 78% took the test during the last 12 months.

Conclusion and recommendations

The study reveals vital insights into key population sizes and their behaviors concerning HIV risk. Recommendations include robust stakeholder engagement at all levels for informed program planning, strategic resource allocation, and intensified focus on targeted interventions for KPs due to rising HIV trends. The study's GIS mapping offers opportunities for precise program planning and the establishment of Drop-in Centers in the mapping districts if the KP size is reasonable for running intervention. Emphasis on community engagement, innovative approaches, and utilizing government facilities is crucial. Capacity building, cultural sensitivity, and behavioral change programs should persist, along with promoting safe practices and empowering female sex workers. The study also suggests conducting an assessment of those active through social media networking. The study observed drug use patterns, and the number of other drug users is increasing, so a comprehensive national size estimation for all drug users is essential. Furthermore, it is recommended to conduct mapping and size estimation before initiating HIV interventions in new districts. The study findings and recommendations hold significant potential to enhance HIV control efforts and work toward the goal of ending AIDS by 2030.

Section-1: Introduction

Background of the study

Bangladesh has a long history of strong political commitment to combat HIV and a response guided by data on the epidemic. Efforts began even before the first case of HIV was detected. From the start, emphasis was given to surveillance, which provides evidence-based on which programmatic decisions are made. The National AIDS Committee (NAC) was formed in 1985, four years before the first case of HIV was detected in Bangladesh. The National AIDS/STD Control (NASC), within the Directorate General of Health Services of the Ministry of Health & Family Welfare (MoHFW), is the main government body responsible for overseeing and coordinating the prevention and control of HIV/AIDS, and ensuring that the National HIV/AIDS Strategy and national policies are implemented. In recent years, there has been a significant global and national contextual change, and the emergence of new pieces of evidence and strategies, which have significant bearing on the HIV responses. The National Strategic Plan (NSP) for HIV and AIDS Response 2018-2022 is in the offing, in alignment with the 4th Health, Nutrition and Population Sector Program (HNPS), 2017-2022 as well as other national, regional and global commitments, especially the 2016 Political Declaration to “End AIDS” by 2030.

In collaboration with NGOs, development partners, and self-help groups, the government has been instrumental in supporting various prevention, treatment, care, and support activities. Most of the intervention programs are implemented through NGOs under the leadership of Directorate General of Health Services. These programs are designed to focus on prevention initiatives among Peoples Who Inject Drugs (PWID), Female Sex Workers (FSW), Men who have Sex with Men (MSM)/ Male Sex Workers (MSW), Hijra, and their intimate partners, increase case detection and provide treatment, care and support services to PLHIV, and also addressing other cross cutting thematic interventions across all KPs. The National Strategic Plan (NSP) for HIV/AIDS revolves around 4 pillars: 1) prevention; 2) treatment, care and support; 3) management, coordination and capacity development and 4) monitoring, evaluation and strategic information. In the National AIDS M&E Plan 2021 – 2023, it is also stated that a national size estimation of the Key Population will be conducted by the AIDS/STD Programme (ASP). Bangladesh has done several exercises to estimate the population sizes of various KP groups in the past, and the last Mapping and Size Estimation activity was conducted in 2016. Regular updates of the Key Population’s estimated size and mapping exercise are important for proper intervention design and resource allocation. Considering the context, ASP, Directorate General of Health Services, Ministry of Health and Family Welfare, Bangladesh has commissioned the Department of Public Health and Informatics, Bangabandhu Sheikh Mujib Medical University (BSMMU) to conduct a “Mapping and Size Estimation of HIV Key Populations and HIV Risk Behaviors in Bangladesh 2023.”

Justification

Many parts of the world, particularly Eastern Europe and central Asia, the Middle East and North Africa, and Latin America, have seen an increase in annual Human Immunodeficiency Virus (HIV) infections over the past decade. Since the beginning of the HIV epidemic, 84.2 million [64.0–113.0 million] people have been infected with HIV, and about 40.1 million [33.6–48.6 million] people have died of HIV. However, the burden of the epidemic continues to vary considerably between countries and regions [1].

Numerous global instabilities have disrupted health services [2]. Since 60% of the world's poorest nations are in debt crisis or are in high danger of it, low- and middle-income countries have faced the

problem of figuring out how to respond to poverty and disease burden [3,4]. Amid such challenging situations, Bangladesh, a middle-income country with a population of around 169 million people, is still considered to be a low-prevalence (less than 0.1% in 2022) country for HIV. The first HIV case in Bangladesh was detected in 1989, and the cumulative number of reported HIV cases up to 2022 was 9,708, of whom 1,820 have died. The estimated number of people living with HIV (PLHIV) is 14,513 [5]. In the last Integrated Biological and Behavioral Survey (IBBS) conducted in 2020, the overall prevalence of HIV among female sex workers (FSW) and people who inject drugs (PWID) was 0.2% and 4.1%, respectively. The prevalence of HIV among PWIDs in two districts (Dhaka and Narayanganj) has approached a concentrated epidemic level (>5%). Though HIV prevalence has decreased among PWIDs and FSWs compared to the previous BSS 2016, the prevalence has increased among men who have sex with men (MSM) (1.5%) and Hijra (1%) as indicated in the recently conducted IBBS [6].

To reduce HIV transmission and eliminate HIV/AIDS as a public health problem by 2030, the Global AIDS Strategy 2021-2026 advocates for equitable and equal access to HIV prevention and treatment programs through the removal of structural impediments [7]. According to UNAIDS' 90/90/90 strategy introduced in 2014, by the year 2020, 90% of persons with HIV were supposed to be aware of their HIV status, 90% of those with HIV would have received antiretroviral therapy (ART), and 90% of those receiving ART should have achieved HIV viral suppression. Unfortunately, these aims were achieved unequally across nations and population categories. In December 2020, UNAIDS published a new set of goals aimed at targeting "95/95/95" to be achieved by 2025. To achieve these goals, the delivery of appropriate HIV prevention and treatment for the KPs and monitoring of the attainment of an equitable response requires robust information on KP size, new HIV infections, and accessibility to services. In addition, in a concentrated HIV epidemic setting, it is suggested to conduct IBBS every 2 years in high-priority areas and every 3-5 years in lower-priority areas, and size estimation of KPs every 2-3 years [8].

Population size estimation is crucial for the development of indicators needed for program monitoring and evaluation (M&E), project disease burden, and HIV transmission, as well as for building epidemic models to see the trends of HIV epidemics. In addition, a reliable estimation of the KP size is required to generate resources to support the uninterrupted delivery of interventions and document progress in HIV prevention.

Measuring the size of the KPs is difficult because the KPs are frequently stigmatized and hidden, thus, making it challenging to reach these communities. The WHO, UNAIDS and reputed agencies recommend several methods to estimate the population size. Some of them are independent sample techniques (such as the capture-recapture method and multiplier technique), population counting techniques (such as the Delphi method, community led mapping technique, etc), official report-based techniques (such as the workbook technique), social network-based techniques (such as respondent-driven sampling techniques and network scale-up techniques), and data-driven techniques (Bayesian estimation method, Stochastic simulation method, and Laska, Meisner, and Siegel estimation methods). However, none of the techniques are precise enough to be considered the gold standard. Each method has its advantages and limitations [9-15].

Four surveys have been conducted previously in Bangladesh to estimate the size of FSW, MSM, PWID and Hijra groups, with the first one in 2003-2004 and the last one in 2015-2016. Historically, the size estimation of the KPs in Bangladesh has been done using the population counting technique. In this technique, mapping is done using a simple community-led approach, ensuring the active leadership and involvement of the KPs themselves [16, 17]. The first size estimation of the KP groups in Bangladesh

was conducted in 2003/2004 [18] where data from different sources were triangulated to estimate the size of the KP groups. In 2009, the National AIDS and STI Programme (NASP) initiated a process of updating the National Population Size Estimates of KPs that included FSWs and their clients, people who inject drugs (PWID), and returning migrants [16]. In 2012, the size of MSM, MSW, and Hijra populations was estimated in all 64 districts [19]. In 2015-16, mapping and size estimation were conducted in 21 districts among all four key populations [20].

To guide the national response to HIV and AIDS, a robust estimate of the size of different KPs is required. Reliable size estimations are important for several reasons. The most common purposes are advocacy, national-level resource mobilization, HIV estimation and projection, geographic prioritization of the response, national-level target setting, local-level program planning and target setting, and monitoring [20]. With this backdrop, ASP, Directorate General of Health Services, Ministry of Health and Family Welfare, Bangladesh, commissioned the Department of Public Health and Informatics, Bangabandhu Sheikh Mujib Medical University (BSMMU) to conduct the "Mapping Study and Size Estimation of Key Populations in Bangladesh for HIV Programs 2023".

Objectives

1.3.1 General objective:

The overall objective of the study was to provide information about the gathering sites of HIV key populations (KPs) and young key populations (YKPs) in selected districts of Bangladesh, extrapolating their size to remaining districts for a national estimation and conducting quantitative and qualitative studies to assess HIV-related risk behaviors, access to services, violence during COVID-19, health education, and healthcare-seeking behaviors among key populations.

1.3.2 Specific objectives:

The specific objectives were to:

- Estimate the number of key populations (KPs) and to create detailed geographical maps of gathering sites for both KPs and YKPs across selected districts in Bangladesh.
- Estimate the size of KPs in the remaining districts based on extrapolating data from the selected districts.
- Estimate the national KP size by accumulating data from all the districts.
- Conduct a quantitative study among the KPs to assess the level of HIV-related risk behaviors, access to HIV services, sexual history, and sexually transmitted infections; and
- Conduct a qualitative study focusing on violence against key populations (KPs) and their experiences amid the COVID-19 pandemic, and understanding the risk perception of HIV and STIs.

Section 2: Methods and Materials

2.1 Mapping and Size Estimation

2.1.1 Phases of Mapping and Size Estimation

The mapping and size estimation of KPs (FSW, MSM, MSW, and PWID) were conducted in 22 selected districts of Bangladesh and subsequently extrapolated to the entire country using sound extrapolation tools and methodologies. The process was broadly divided into three phases.

- In the initial phase, the mapping and size estimation of Key Populations (KPs) in the selected districts were undertaken. This involved selecting districts for direct data collection, identifying potential locations, mapping the spots, and estimating the size of KPs in each identified spot.
- Moving on to the second phase, the mapping and size estimation process underwent validation in selected districts by a dedicated data validation team. The validation process encompassed both spot validation and verification of the estimated sizes, following predefined validation methodologies.
- Transitioning to the concluding phase, the size of each Key Population group was projected for the mapped districts while incorporating recommended correction factors. Subsequently, the estimations made for the mapped districts were extrapolated to encompass the unmapped districts, resulting in comprehensive national estimates.

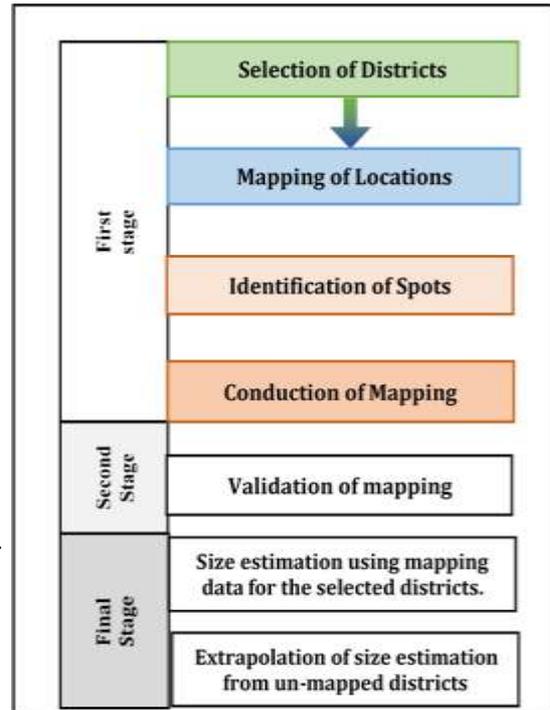


Figure 1: Flowchart of Mapping and Size Estimation

2.1.2 Mapping and Size Estimation of Key Populations (KPs) in Selected Districts of Bangladesh

The mapping exercise for the size estimation of key populations (KPs) was conducted in 22 districts (out of 64) of Bangladesh following the WHO guidelines [17]. Data obtained from the 22 districts were extrapolated to other (n=42) districts (from which mapping data were not collected) to get the national estimate of the KP size. Details are described below.

2.1.3 Selection of Districts

The study team selected 22 districts for mapping and data collection. The districts were selected after clustering all 64 districts based on the estimated concentration of each key population and its typologies (as per previous size estimation in 2015-16), the number of new HIV reported cases from 2016-2021, and districts bordering neighboring countries.

The term "cluster" is used to describe the groups of districts with similar characteristics. Using k-means cluster analysis, the 64 districts were grouped into six clusters. Dhaka, Chattogram, and Sylhet district made up three distinct clusters that had larger concentrations of key populations than the other districts

and therefore included in the study as separate clusters. The remaining 61 districts were organized into three clusters, 8 districts were in the fourth cluster, 30 were in the fifth, and 23 were in the sixth cluster (Table 2.1).

A total of 22 districts were selected by following systematic methodologies. Dhaka, Chattogram, and Sylhet districts were selected because they had distinct characteristics that separated them from the other three clusters. The rest of the 19 districts were selected according to the proportional allocation formula that allowed selection of 3 districts from the fourth cluster, 9 districts from the fifth cluster, and 7 districts from the sixth cluster. Table 2.1 shows the districts that were randomly selected to collect data for mapping and size estimation.

Table 2.1: Clustering of all Districts for Mapping and Size Estimations 2023

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Selected Districts (n=22)					
Dhaka	Chattogram	Sylhet	Barishal, Gazipur, Dinajpur,	Bhola, Chandpur, Jhalokati, Chuadanga, Magura, Nilphamari, Rangamati, Sunamganj, Kurigram	Naogaon, Cumilla, Cox's Bazar, Sirajganj, Gopalganj, Bogra, Kushtia
Remaining Districts (n=42)					
			Mymensingh, Narayanganj, Jessore, Khulna, and Rajshahi	Bandarban, Feni, Khagrachhari, Lakshmipur, Noakhali, Faridpur, Jamalpur, Narsingdi, Sherpur, Tangail, Jhenaidah, Meherpur, Narail, Satkhira, Joypurhat, Natore, Gaibandha, Lalmonirhat, Panchagarh, Thakurgaon, and Habiganj	Barguna, Patuakhali, Pirojpur, Brahmanbaria, Kishoregonj, Madaripur, Manikganj, Munshiganj, Netrakona, Rajbari, Shariatpur, Bagerhat, Naogaon, Pabna, Chapai Nababganj, Rangpur and Maulavibazar

2.1.4 Operational Strategies for Mapping and Size estimations

Population size estimation of the mapped districts

A mixed method (qualitative and quantitative) approach was followed at three different levels: district, location, and spot to identify spots and estimate the number of key populations.

District level:

At this level, the methodology employed was Group Discussion (GD), a participatory approach that fostered collaborative insights. The participants encompassed stakeholders including representatives from Non-Governmental Organizations (NGOs), Community-Based Organizations (CBOs), and Self-Help Groups (SHGs).

During the group discussion, the study team carefully put together a list of places in the district. These places might have KPs who are essential for the study, and also explore the locations where some people are available to help the study team and collect the location and contact information. These steps helped the study team to go to local-level exploration for KP spots. The study team also met with district-level health officials, law enforcement officials, the Department of Narcotics Control (DNC), and public representatives.

Local level:

At this level, Key Informant Interview (KII) was employed where the participants consisted of 3-5 individuals who had diverse backgrounds and experiences. These key informants were selected based on their names that were brought up during group discussions held at the district level and they were found near the locality. At this level, the study team gathered information from those local key informants. It helped to establish the boundaries of specific locations and create an extensive list of spots, including important landmarks and types of places. Additionally, the timing of when key populations visit these spots was also noted. To identify these spots, free listing technique was applied. This technique involved segmenting the locations and then noting down the names of spots mentioned by the key informants, effectively creating a comprehensive inventory of the locations.

Spot level:

A Rapid Field Assessment (RFA) was implemented at the spot level. While visiting various spots, the research team engaged in interviews with the high-risk groups, commonly known as the Key Populations (KPs), as well as community gatekeepers and key informants, such as pimps, shopkeepers, ferrywalas (vendors), and rickshaw/van pullers, etc. The primary objective of the mapping was to pinpoint the locations where key populations typically gather.

Estimating the number of individuals in these populations at each spot involved identifying the sites they frequented most. The report identified and included only sites frequently visited by key populations. For this mapping approach, the estimates regarding the population at each site were based on numerical assessments provided by key informants rather than a direct count of individuals present. As a result, variations might occur in the estimates given by respondents interviewed at different sites.

In districts where targeted intervention was implemented, efforts were expended not only to identify already established spots but also to locate new spots. Conversely, districts lacking interventions for high-risk groups (HRGs) didn't possess prior insights into the size, location, and characteristics of those

HRGs. Thus, a meticulous planning procedure was performed before embarking on the field for mapping and size estimations to accumulate precise data about locations and spots for each population group. Rapid Field Assessment (RFA) was executed at these identified spots with the aid of community liaisons (CLs). In cases where CLs couldn't be identified, outreach staff such as outreach workers from neighboring intervention districts or local NGOs, as feasible and appropriate, extended assistance for RFA. The field team then commenced visits to each spot as per the field implementation plan.

2.1.5 Size estimation using mapping data adjustment for correction factors

An algorithm was developed and correction factors were applied to estimate the KP size in different districts of Bangladesh. The adjustment factors that were used to adjust the KP size include:

- **Mobility:** For the adjustment of duplication of KPs going to multiple spots.
- **Frequency:** To adjust for the frequency at which a KP comes to a spot.
- **Hidden:** To adjust for the “hidden” population to a spot.

Mobility correction factor:

The initial correction factor introduced to the mapped figures accounted for mobility adjustments. Counting the same individual at multiple locations can lead to an overestimation of the population size. Data to rectify this issue was gathered during the mapping phase. The primary aim was to collect information about the number of key population members who might have frequented multiple venues while the mapping was underway.

During mapping, the following information was collected:

- The estimated number of key population members generally present at the site during the standard peak time.
- A proportion of key population members are expected to visit other sites during the same standard peak time.

This information was obtained from key informants at the site who were members of the key population. The team made an effort to identify key informants who could provide reliable information. The calculation for the mobility correction between the two spots was done by using the formula:

$$S_2 = S_1 \times (1 - P_1/2)$$

Here,

S_2 = Estimated number of KP individuals after adjustment

S_1 = Estimated number of KP individuals

P_1 = % of KP individuals who visit more than one hotspot in a day

Correction for frequency of visiting sites

The next correction factor was applied to account for the frequency of visiting sites and correct for the under-representation of key population members who were absent when the mapping team visited the sites. During a mapping exercise, it was reasonable to count key population members who were currently active (e.g., active in the month). However, even when mapping teams visited sites during peak times, there would still be a certain percentage, whether large or small, who would not be present at those times. The frequency correction aimed to address this portion of the group that was otherwise visible (as they frequented the mapped sites) but was missed during mapping team visits.

To adjust for the frequency factor, the following information was collected during the mapping process.

- The estimated number of key population members generally present at the site during the standard peak time.
- The proportion of the key population who had visited the spot during the agreed-upon standard peak time in the previous week.

This information was obtained from the key informants who were members of the key population. The team made an effort to identify key informants who could provide reliable information. This information served as a proxy for the proportion of people who would have been missed during spot visits.

The following formula was used to adjust for the frequency of visiting sites:

$$S_3 = S_2 / (1 - P_2)$$

Here,

S_3 = Estimated number of KP individuals after adjustment of frequency factor

S_2 = Estimated number of KP individuals after adjustment of mobility factor

P_2 = Estimated proportion of KPs who did not appear at venues during the standard peak time

Adjusting for the portion of the population who do not frequent spots (hidden factor)

The subsequent adjustment addressed the proportion of key population members who are actively involved in risky behaviors but do not visit the identified spots. This hidden or less visible segment of the key population operates through personal networks or exclusively via cell phones or online platforms. To account for this hidden proportion of the population, it was crucial to estimate the fraction of key population members who never visited these spots.

Insights into this hidden population were derived from key informants who were themselves key population members at the site. Care was taken to identify key informants capable of providing reliable information. The calculation involved a straightforward inflation factor, analogous to the one used for frequency adjustment. This factor inflated the mapped figure to accommodate the concealed segment. To estimate the hidden factor, the following information was collected during the mapping process:

- The estimated number of key population members generally present at the site during the standard peak time, and
- The proportion of key population members who never visit the sites

Based on the collected data from the spot level, the adjustment of the size of the key populations was done using the following formula:

$$S_4 = S_3 / (1 - P_3)$$

Where,

S_4 = Estimated number of KP individuals after adjustment of hidden factor

S_3 = Estimated number of KP individuals after adjustment of frequency factor

P_3 = Estimated proportion of key population members who never come to sites

An example of adjusting correction factors for mapped districts and extrapolating of the unmapped districts is attached as Annexure-1.

2.1.6 Validation of mapping and size estimation

Approaches

To ensure the accuracy of the field mapping, a validation exercise was conducted. It was essential in the size estimation of the key populations to assess any differences between the estimates provided by the investigation team and the validation team. The validation process was two-pronged, validation of the spots and validation of KP numbers in selected districts.

Operational strategies:

Validation of the spots

In the initial stage of the validation process, four districts (20%) were randomly selected. Among the four districts, two were from intervention districts (Gazipur and Cumilla) and two were from non-intervention districts (Gopalganj and Kurigram). In the second step, the validation team selected 10% KP-specific spots using the probability proportional to size (PPS) method for physical verification. Figure 2 shows the matched spots, missed spot and new spot during the spot validation process. The names of districts and the number of spots decided for validation and validation findings are described in the results section.



Figure 2: Spot Validation

Validation of the KP numbers

There were two types of methods applied for the validation of the KP size in the spots.

Capture-recapture method (CRC) for validation of population size

The capture-recapture method was used by the study team to validate the size estimation of the key populations. It was based on the principle that if a sample of individuals from the population was captured, marked, and then released, and a second sample was captured later, the proportion of marked individuals in the second sample would provide an estimate of the total size of the population. This method was applicable for estimating the size of key populations, where individuals could be captured, marked, and released. The method assumed that the probability of capturing an individual was proportional to its abundance in the population and that the marking process did not affect the recapture probability.

Once the spots had been identified and documented, some spots were selected for data collection in the validation districts. The selection was based on 10% of the spots from 5% locations that the validation team had investigated to estimate the KPs. The total number of spots selected for validation in 4 districts was 177.

The chosen spots were visited by individuals distributing objects (key rings). They engaged in conversations with individuals present at the spot to confirm they were within the intended community of key populations (KPs). Upon verification, the object distributor distributed objects (key rings), to the identified KPs. The distribution of objects, known as the first capture, was carried out within the day and selected as spots for validation during business pick hours (6-8 hours) of each KP. The quantity of

objects distributed was determined based on the established sample size. To avoid duplication, during the object distribution, the field team ensured that each KP received the object for the first time. For the recapture process, the field team returned to the selected spots about a week later. They approached the KPs and inquired if they had received any object from anyone. If confirmed, the KPs were asked to exhibit or describe the object received. Matching the object with the one distributed during the first capture categorized them as recaptures. If no object was received previously, they were deemed a new capture. The resulting numbers were carefully recorded by the field team.

For validation, certain team members acted as object distributors during the data collection phase. Each distributor provided only one object to each KP, with rotations occurring between Capture 1 and Capture 2 in the same spots.

Upon obtaining the capture-recapture data from the spots, the population size was calculated using the following formula:

$$\text{Population size } N = M \times C/R$$

Where,

- N = estimate of total KP size
- M = originally marked in the first capture
- C = number captured on the second time
- R = recaptured (second-day capture – first-day capture)

Using the above formula, the population size of each KP was calculated. The 95% confidence intervals (CIs) were also calculated for the estimates using the following formula:

$$95\% \text{ Confidence Interval (CI)} = N \pm 1.96 \text{ Var (N)}$$

$$\text{Variance, Var (N)} = M \times C (M-R) \times (C-R)/R^3$$

Validation of the KP size, estimated by the MSE, was done against the 95% CI that was calculated for the CRC method. The data of the CRC method is already adjusted for the mobility and frequency factors that are used to adjust the mapping data for size estimation. Therefore, the estimated size of the KP groups, calculated by the MSE with the adjustment for mobility and frequency factors, was compared with the 95% CI of the estimates in the CRC method. When the estimated numbers derived by the MSE fall within the 95% CI of the CRC method, it was considered that the data were consistent (valid).

Multiplier method

The Multiplier method was used by the study team, relying on information from at least two data sources that overlapped in a known way. The following process was followed to estimate the size by the multiplier method:

- In the multiplier method, the first data source was the program data obtained from the DICs operated by the implementing partners in two districts, Cumilla and Gazipur. This data included the number of KPs who received HIV testing Services (HTS) from the Drop-in Centers/Service centers during the last 6 months.
- The second data source consisted of a representative survey conducted among members of the key population for which the size was estimated during the validation data collection.

The population size was derived by multiplying the "number of members of a given population who attended a specific program service" over a defined period of 6 months by the "inverse of the proportion of the same population group who responded (in the survey) that they attended the same service" during the same period.

The following formula was used to estimate the population size:

$$\text{Estimated size} = n * (1/p)$$

Where: n represents the number of FSW/MSM/MSW/PWID members who accessed a specific service during a defined period.

p represents the proportion of FSW/MSM/MSW/PWID members who reported having accessed the same service during the same period in a representative survey among that population.

In the multiplier method, mathematically, it is not possible to calculate the 95% CI of the estimated size. Therefore, for validation, we compared the KP size estimated by the multiplier method with the minimum value and the point estimate that has been derived by the MSE. If the estimate calculated by the multiplier method falls within the range of the minimum and point estimate values, it was considered valid.

2.1.7 Extrapolating local data to develop national size estimates

This study collected data from 22 (out of 64) districts for the size estimation. To estimate the size of KPs in the non-sampled districts (n=42), extrapolation was needed. After finalization of the local estimates, extrapolation of local data to the non-sampled districts was done to develop the national estimates of the KP size. The process involved the following steps:

- Calculation of the size of the female and male population aged 15-49 years in all 64 districts from the census data.
- Calculation of the proportion of the female population (15-19 years of age) involved in sex work in the cluster districts where mapping data were collected. Finally, the average of the proportions (of the cluster districts) was calculated. This average proportion was the factor used for extrapolation to estimate the size of FSWs in other districts.
- The process and calculation of the extrapolation factor were the same for PWID (male), MSM, and MSW, except that the male population aged 15-49 years in the 22 districts was considered.
- Female PWIDs were found in a few districts. The female PWID numbers under intervention districts were also collected from the implementing partners. Then the relevant adjustment factors were applied and female PWID numbers were estimated for the specific districts.

These calculations allowed for applying the numbers from districts with mapping data to the districts within the same cluster that did not have any data.

2.1.8 Estimation of Hijra population size

In 2022, the Government of Bangladesh conducted a survey to estimate the size of the Hijra population [21]. According to the survey, the Hijra population in the country was estimated to be 12,629. Since the study was conducted recently, the current survey did not collect data from all the 22 targeted districts to estimate the Hijra population size. However, this study validated the government's estimates by collecting data from 13 districts (Table 2.2) and comparing them with the data collected by the government from the same 13 districts using the Bland-Altman method.

Table 2.2 : Districts from which data on the Hijra population were collected for the validation of the government’s estimates

1. Barisal	5. Gazipur	8. Sirajganj	11. Nilphama
2. Bhola	6. Bogra	9. Dinajpur	12. Sunamganj
3. Jhalokat	7. Naogaon	10. Kurigram	13. Sylhet
4. Dhaka			

2.1.9 Stakeholder engagement in the mapping and size estimation

Stakeholder engagement was a crucial aspect of the study to ensure the accuracy and relevance of the size estimation for key populations. The study team organized several consultation meetings involving key stakeholders such as representatives from the government, UN agencies, NGOs, CBOs, and network members. During these meetings, the study team presented detailed procedures and methodologies used in the study, providing stakeholders with an overview of the study's objectives and approach. The stakeholders actively participated in group work, where they critically analyzed the draft estimation of the key population size for the 64 districts.

Using their expertise and knowledge, stakeholders reviewed the draft estimates considering various factors, including current program data, previous program data, and programmatic mapping data. They provided valuable inputs and suggestions to enhance the accuracy and reliability of the size estimation. The stakeholders' feedback and recommendations were then presented before the wider audience, allowing for further discussions and exchange of ideas. The study team carefully reviewed the recommendations from the group work, considering the inputs from all stakeholders.

Consensus-building played a vital role in finalizing the key population size estimates. The study team collaborated with the key stakeholders, taking into account their perspectives and reaching a consensus on the adjusted size estimation figures. This inclusive and participatory approach ensured that the size estimation process reflected the collective wisdom and expertise of the stakeholders. By incorporating their insights and feedback, the study team enhanced the credibility and relevance of the size estimation for key populations in Bangladesh.

2.2 Behavioral survey among the key populations

The objectives of the behavioral survey were to assess: a) risk behaviors for HIV/AIDS; and b) availability, access, and utilization of HIV prevention services in the districts. To fulfill the objectives, a cross-sectional survey with mixed methods (quantitative and qualitative methods) was employed among all four key populations (KPs). Behavioral data from study subjects were collected during the Rapid Field Assessment (RFA) of KP size estimation from 22 districts.

2.2.1 Quantitative data collection

Quantitative data were collected from all the KP groups using different tools tailored to each specific key population. Quantitative data were collected through face-to-face interviews by a group of trained data collectors.

Sample size and sampling technique

The main objective of the behavioral survey was to assess the risk behaviors of KP groups. The target population for the survey was the KP groups, such as FSWs, MSM, Hijra, and PWID. Since a cross-

sectional study was designed for data collection, the sample size was calculated using the following formula [23]

$$n = \frac{Z_{(1-\alpha/2)}^2 PQ}{d^2} \times DE$$

Where,

- n is the desired sample size;
- Z is the value from the standard normal distribution at a specified level of significance (the z-value for a 5% level of significance is 1.96);
- P is the anticipated population proportion (considered as 50.0% or 0.50 to get the highest sample size to estimate the indicators);
- Q is (1-P) or 0.50;
- d is the allowable error (considered as 3.0% or 0.03);
- Alpha (α) is the level of significance (considered as 0.05); and
- DE is the design effect (considered as 1.5 since a cluster sampling method was used)

With the above parameters, the estimated minimum number of KPs required for the study was 1,601. Considering the difficulties in accessing the KP groups, a 20% non-response was anticipated, and thus, the final sample size was 2002. According to the mapping and size estimation report of 2015-2016 [16] the proportions of each broad key population were: FSW 36.94%, MSM 47.83%, Hijra 3.40%, and PWID 11.82%. Considering these proportions, the calculated sample size for each type of KP was allocated proportionally, using the following formula:

$$\text{Sample size for each KP} = (\text{Calculated sample size} \times \% \text{ of KP}) \div 100$$

This study collected data from 1,969 KPs [827 from FSWs, 865 from MSM/MSW (381 MSM and 484 MSW) and 277 from PWID groups] from 22 districts. Data from Hijra population could not be collected because of accessibility problems. The number of samples allocated to each district was proportional to the size of the KPs considering the estimates of the previous survey [16].

Survey tools

Separate tools were used for different key populations (KPs). The survey tools included questions related to identification (type of respondent, typology, etc.), personal information (age, education, marital status, sexual partner, etc.), and relevant sexual history. Additional questions were included in the questionnaire, such as the duration of involvement, reasons behind starting this work, and the existence of targeted interventions, among others.

Quantitative data analysis

Once the data collection phase was completed, the collected data were carefully reviewed and cleaned to ensure consistency. Data cleaning involved checking for missing values, outliers, and inconsistencies. Necessary corrections were made to the dataset before proceeding to the analysis phase.

The data were analyzed by SPSS and Stata software. Mainly descriptive statistics, such as frequency, percentage, mean, and standard deviation, were employed to analyze the data. The results are presented in the form of tables and graphs.

Quantitative data quality control

The quality of the mapping and size estimation was ensured through the recruitment of experienced staff, developing their capacity through skilled-based training, and field monitoring. An experience

research team, including the research staff, fieldworkers, field executives, supervisors, and investigators was selected to carry out the exercises. Each team member was assigned specific Terms of Reference (TOR) and deliverables for which they were held accountable. Preference was given to individuals with relevant experience in mapping and association with the HIV program or related disciplines, and those with direct experience were given priority. Additionally, community representatives recruited to support the field research were selected based on their experience.

All field research teams underwent skill-building training conducted in Dhaka. The objectives of the training were: to orient participants on issues of sexuality, HIV, and high-risk behaviors; to enhance their understanding of key population behaviors and the structural and socio-cultural factors that increase their vulnerability to HIV; to familiarize them with the research methodology, tools, and techniques required for data collection; to train them in questionnaire administration techniques, including approach and probing; and to provide guidance on ethics, documentation techniques, handling agitated respondents, confidentiality, and informed consent. The training also covered other fieldwork protocols standardized for implementation. The research team monitored the fieldwork daily to ensure activity implementation, provide supportive supervision, and offer feedback. Supervisors conducted periodic field visits to provide additional support and supervision.

2.2.2 Qualitative data collection

Study design and population

The qualitative component of the study applied the Social Cognitive Theory. Psychosocial variables, including attitudes, self-efficacy, and barriers to condom use, were measured. Attitudes were assessed at the individual level, reflecting key populations' reactions to environmental stimuli that could influence their behavior. Self-efficacy, a cognitive factor in this theory, evaluated the confidence of individual key populations to implement specific behaviors. The Health Belief Model explains how individuals' health-related behaviors are influenced by their perceptions of the behaviors and the consequences associated with them. Health behavior change was influenced by perceived susceptibility to health problems, perceived seriousness of health problems, perceived barriers to behavior change, and perceived benefits of behavior change. Therefore, perceived barriers to condom use were related to intentions and practical use of condoms. Self-efficacy and condom use were also associated.

The study team employed the qualitative method of in-depth interviews (IDIs) to explore the attitudes and beliefs of key populations regarding HIV and their support or hindrance of safe sex practices, such as condom use and negotiation skills. IDIs were expected to generate descriptive and information-rich data on beliefs and practices related to sensitive topics like sexuality and HIV/AIDS. These interviews provided insights into the underlying reasons behind certain beliefs and practices within different sociocultural contexts.

The study team conducted IDIs with four key populations identified in the field of HIV/AIDS: Female Sex Workers (FSWs), Men having Sex with Men (MSM), Male Sex Workers (MSWs) and People who inject drugs (PWIDs). The number of interviews conducted was flexible and based on information saturation. The study team purposively recruited an equal number of participants from each of the four key population categories, both from high and low-prevalence areas.

Qualitative methods

In-depth interviews were conducted with four categories of key populations, focusing on their knowledge about HIV/AIDS prevention, skills that facilitate safe sex practices, and factors that hinder the adoption of safe sex practices. Sexual behavior of the key populations was explored, including their partners and engagement in safe or unsafe sex. The availability of condoms and barriers to purchasing them were also examined. Regarding safe sex practices through condom use, interviews explored condom use with different types of partners, consistent condom use, and perceptions of consistent/regular condom use with different partners. Female key populations were specifically asked about experiences of coercive sex and condom use in such situations.

In the in-depth interviews, both male and female persons who inject drugs (PWID) were included. Detailed information was collected regarding sharing needles/syringes with others for drug injections, and the reasons and perceptions behind such sharing. Female sex workers (FSWs), another important key population, were also part of the qualitative component. In addition to the general topics mentioned above, social stigma and discrimination faced by FSWs from their families and society were examined. The interviews with males who have sex with males (MSM) aimed to understand their sexual relationships with both men and women. Marriage, an important social aspect in Bangladesh, was explored among MSM, including societal pressures to marry and have children. Violence, which is a major concern for key populations like FSWs and Hijra individuals, was also a significant topic explored in the interviews.

Qualitative data analysis

Transcripts were prepared from the tape-recorded in-depth interviews, ensuring necessary consent was obtained from the respondents. Field Research Assistants (FRAs) transcribed the interviews and incorporated other observational field notes. After becoming familiar with the transcripts, initial coding was conducted based on pre-defined themes and emergent sub-themes. The coding process continued until saturation was reached, with consensus achieved between the FRAs and the investigator's team. The next step of analysis involved developing a matrix to assess patterns and associations of information among intra and inter-groups of the four key population types. The matrix helped identify significant differences and patterns in attitudes, knowledge, and behavior related to specific themes and sub-themes.

Quality assurance measures for qualitative data

Separate qualitative tools were developed for the in-depth interviews with the four key population categories. Male and female FRAs with prior experience in qualitative research methods and HIV/sexually transmitted infections (STIs) were recruited for data collection. The investigator's team provided intensive training, including classroom lectures on STIs/HIV/AIDS and techniques used in qualitative research methods. Spot training on qualitative methods was also conducted during the pre-testing phase of the guidelines. Throughout the study's implementation, the investigators monitored the data collection process in the field periodically. Regular meetings were held between the FRAs and investigators to review the interviews and discuss any issues encountered during data collection.

2.2.3 Recruitment of survey participants

The field research team visited all the selected KP gathering points. A field research assistant (FRA) along with a local guide (representative of the KP community) was engaged in rapport-building within the local community and KP members. They identified the KPs willing to participate in the survey. The FRA explained the study's purpose and obtained the informed consent, and the conducted the interview. This sequential process ensured a respectful and ethical approach to involving participants in the survey.

2.2.4 Using online data collection method

Quantitative data were collected using a secured online data collection and management software (tab-based REDCap software). This software allowed for the building and management of secured online surveys and databases, capable of collecting various types of data in any environment. The customized software was developed after finalizing the quantitative data collection tools. The relevant field research team members collected data using this software and 'Data Management and GIS Expert' regularly backed up the data on the central server.

2.2.5 Field management

Under the leadership of the Principal Investigator (PI), BSMMU followed a stringent monitoring and supervision process to ensure timely data collection. From the beginning of the survey, the PD and PI, key team members of each component and associates (including Field Operations and Data Management teams) conducted regular and random sample-based monitoring and supervision visits to observe the field activities and progress. The Field Operations Managers and Team Leaders were responsible for ensuring that the survey was implemented in the field according to the protocol. Regular and periodic team meetings were held to provide updates to key study team members and monitor progress, as well as to plan and address the field-level problems if there were any.

Section-3: Results

This section presents the key findings of the size estimation of key populations (KPs) and the behavioral survey. The outcomes of this comprehensive study provide critical insights into the size, characteristics, and risk behaviors of key populations in Bangladesh, specifically targeting female sex workers (FSWs), men who have sex with men (MSM), male sex workers (MSW), and people who inject drugs (PWID). By shedding light on these aspects, the findings contribute to evidence-based decision-making, guiding future interventions and policy formulations aimed at effective HIV prevention and care.

The results of the study are presented in three distinct parts, namely Mapping and Size Estimation, Quantitative Findings, and Qualitative Findings, each offering unique insights into the complexities of key populations and their interaction with HIV prevention and care programs.

The first sub-section (3.1), Mapping and Size Estimation, offers a comprehensive overview of the spatial distribution and population size of key populations within the selected districts. The concentration maps of key populations aim to guide which districts need prioritization for interventions, while the detailed spot-based maps (mapping districts) facilitate the planning of targeted interventions. The KP-specific spot-wise size estimation data collection from 22 districts and subsequent extrapolation to the remaining districts, helps in achieving national KP estimates. The correction factors for mobility, frequency, and hidden populations add further rigor to the size estimation process.

The second sub-section (3.2), Quantitative Findings, shows the results of numerical data collected through structured survey. This segment provides valuable insights into the demographic characteristics, risk behaviors, and service utilization patterns of key populations.

The third sub-section (3.3), Qualitative Findings, enriches the results by exploring the live experiences, attitudes, and perceptions of key populations through in-depth interviews and Key Informant Interviews (KIIs). This qualitative analysis sheds light on the social determinants influencing HIV vulnerability and care-seeking behaviors.

By integrating these three perspectives, this section offers a comprehensive understanding of the current HIV landscape among key populations in Bangladesh. This holistic view facilitates informed decision-making and strategic planning for future interventions and policies aimed at achieving the specific Sustainable Development Goal (SDG) target by 2030.

3.1 Mapping and size estimation of KPs

The relevant data for mapping and size estimation of key populations (FSWs, MSM, MSWs, and PWIDs) were directly collected from 22 districts, with size estimation for the remaining 42 districts extrapolated using methodologies described in the methodology section. This exercise provided crucial insights into the distribution and numbers of key populations, laying the foundation for targeted public health initiatives to address the HIV prevention among them. The result section also highlighted the concentration of different key populations across the 64 districts of Bangladesh, as reflected in the map. Additionally, the study captured district-specific key population spots in 22 districts, aiding intervention design.

Female Sex Workers (FSW)

3.1.1 Mapping and size estimation of female sex workers (FSWs)



Map 1: Estimated size of FSWs by districts (Except brothel-based FSWs)

Map 3.1 shows the estimated size of FSWs by districts. Table 3.1 displays the estimated number of FSWs across different typologies and their age groups. Within the three FSW categories, the age group of 10-19 years indicates a minimum estimate of 5,622 and a point estimate of 12,490. The age group of 20-24 years shows a minimum estimate of 7,694 and a point estimate of 17,540. For ages 25 years and above, the minimum estimate was 34,770, and the point estimate was 79,595.

Table 3.1: Estimated number of FSWs of different typology and their broad age groups

Typology	Age Distribution						Total	
	10-19 years		20-24 years		25 years and above		Minimum	Point estimate
	Minimum	Point estimate	Minimum	Point estimate	Minimum	Point estimate		
SBFSW	3,086	4,759	3,904	6,021	17,410	26,849	24,400	37,629
HBFSW	882	2,845	1,198	3,867	5,408	17,455	7,488	24,167
RBFSW	1,654	4,885	2,592	7,652	11,952	35,291	16,198	47,828
Total	5,622	12,490	7,694	17,540	34,770	79,595	48,086	1,09,624

3.1.1.1 Size estimation of street based FSWs (SBFSWs)

Table 3.2 portrays the division and district wise variation in the estimated number of SBFSWs. It is evident from the table that among the SBFSWs, which ranges from a minimum of 55 to a maximum of 7,186, their point estimate was highest in Dhaka district followed by Chattogram district.

Table 3.2: Estimated size of Street-Based FSWs by districts

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years and above
BARISHAL	Barguna	81	135	19	116
	Barisal	282	405	24	381
	Bhola	197	304	19	285
	Jhalokati	258	398	23	375
	Patuakhali	134	223	31	192
	Pirojpur	94	157	22	135
CHATTOGRAM	Bandarban	69	115	8	107
	Brahmanbaria	244	407	57	350
	Chandpur	215	332	26	306
	Chattogram	969	1,391	42	1,349
	Cox's bazar	241	382	16	366
	Cumilla	202	319	98	221
	Feni	270	450	32	419
	Khagrachhari	106	177	12	165
	Lakshmipur	293	489	34	455
	Noakhali	564	940	66	874
Rangamati	58	90	6	84	
DHAKA	Dhaka	4,950	7,186	1613	5,573
	Faridpur	339	566	40	526
	Gazipur	1,855	2,661	495	2,166
	Gopalganj	246	389	57	332
	Kishoregonj	237	396	55	341
	Madaripur	98	164	23	141
	Manikganj	141	235	33	202
	Munshiganj	133	221	31	190
	Narayanganj	769	1,099	135	964

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years and above
	Narsingdi	889	1,481	104	1,377
	Rajbari	95	159	22	137
	Shariatpur	105	175	25	151
	Tangail	671	1,119	78	1,041
KHULNA	Bagerhat	128	213	30	183
	Chuadanga	252	388	15	373
	Jessore	605	865	107	758
	Jhenaidah	332	554	39	515
	Khulna	512	731	90	641
	Kushtia	176	278	3	275
	Magura	438	677	26	651
	Meherpur	123	204	14	190
	Narail	124	207	14	193
	Satkhira	374	623	44	579
MYMENSINGH	Jamalpur	331	552	39	513
	Mymensingh	1,020	1,458	180	1,278
	Netrakona	151	251	35	216
	Sherpur	227	378	26	352
RAJSHAHI	Bogra	267	423	49	374
	Chapai nababganj	151	252	35	217
	Joypurhat	164	274	19	255
	Naogaon	55	86	6	80
	Natore	315	525	37	488
	Pabna	235	391	55	336
	Rajshahi	586	837	103	734
	Sirajganj	150	237	63	174
RANGPUR	Dinajpur	341	489	60	429
	Gaibandha	409	681	48	633
	Kurigram	182	281	37	244
	Lalmonirhat	221	369	26	343
	Nilphamari	199	307	24	283
	Panchagarh	188	313	22	291
	Rangpur	273	454	64	390
	Thakurgaon	244	406	28	378
SYLHET	Habiganj	349	582	41	541
	Maulvibazar	167	279	39	240
	Sunamganj	62	96	8	88
	Sylhet	244	403	88	315
Total		24,400	37,629	4,759	32,870

Note: The highlighted rows indicate districts from where the data was collected.

3.1.1.2 Size estimation of hotel-based FSWs (HBFSWs)

Table 3.3 depicts the division and district-wise variation in the estimated number of HBFSWs. It is evident from the table that among the HBFSWs, which ranges from a minimum of 13 to the point estimate of 1333, the point estimate is the maximum in Dhaka division with Narsingdi, Tangail followed by Chattogram division with Cox's Bazar being the third highest. In the Dhaka district, the minimum size estimate is 398 with a point estimate of 1,166, where 287 are between 10 to 19 years of age (point estimates), and 879 are in the 20 years and above age group.

Table 3.3: Estimated size of hotel-based FSWs by districts

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years and above
BARISHAL	Barisal	132	343	31	312
	Bhola	49	158	3	155
	Jhalokati	39	125	13	113
	Barguna	27	135	20	115
	Patuakhali	45	223	33	190
	Pirojpur	31	157	24	133
CHATTOGRAM	Chattogram	416	1,221	85	1,136
	Bandarban	34	103	10	93
	Chandpur	115	369	26	343
	Feni	135	405	41	365
	Khagrachhari	53	159	16	143
	Lakshmipur	147	440	44	396
	Noakhali	282	846	85	761
	Rangamati	203	529	8	521
	Brahmanbaria	81	407	61	346
	Cumilla	157	506	16	490
	Cox's bazar	376	1,214	26	1,188
	DHAKA	Dhaka	398	1,166	287
Gazipur		44	115	16	99
Narayanganj		110	330	46	284
Faridpur		170	509	51	458
Narsingdi		444	1,333	133	1,200
Tangail		336	1,007	101	906
Gopalganj		46	148	10	138
Kishoregonj		79	396	59	337
Madaripur		33	164	25	139
Manikganj		47	235	35	200
Munshiganj		44	221	33	188
Rajbari		32	159	24	135
Shariatpur		35	175	26	149
KHULNA		Jessore	86	259	36
	Khulna	73	219	31	188
	Chuadanga	93	299	3	296
	Jhenaidah	166	498	50	448
	Magura	112	360	6	354
	Meherpur	61	184	18	166
	Narail	62	186	19	167
	Satkhira	187	561	56	505
	Bagerhat	43	213	32	181
	Kushtia	13	42	6	36
	MYMENSINGH	Mymensingh	146	437	61
Jamalpur		165	496	50	446
Sherpur		113	340	34	306
Netrakona		50	251	38	213
RAJSHAHI	Rajshahi	84	251	35	216
	Joypurhat	82	246	25	221
	Natore	157	472	47	425
	Bogra	83	268	68	200

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years and above
RANGPUR	Naogaon	20	64	19	45
	Chapai Nababganj	50	252	38	214
	Pabna	78	391	59	332
	Sirajganj	53	172	42	130
	Dinajpur	108	316	59	257
	Gaibandha	204	613	61	552
	Kurigram	34	109	26	83
	Lalmonirhat	111	332	33	299
SYLHET	Nilphamari	74	238	51	187
	Panchagarh	94	281	28	253
	Thakurgaon	122	365	37	329
	Rangpur	91	454	68	386
SYLHET	Sylhet	263	772	203	569
	Habiganj	175	524	52	472
	Sunamganj	39	125	26	99
	Maulvibazar	56	279	42	237
Total		7488	24167	2845	21,322

Note: The highlighted rows indicate districts from where the data was collected.

3.1.1.3 Size estimation of residence-based FSWs (RBFSWs)

Table 3.4 provides the division and district-wise variation in the estimated number of RBFSWs. It is clear from the table that among the RBFSWs, which ranges from a minimum size of 19 to the point estimate of 6,895, their estimate is largest in the Dhaka division followed by the Rangpur division. In the Dhaka division, the minimum size estimate is 2,351 with a point estimate of 6,895, where 980 are among the 10 to 19 years' age group (point estimates), and 5,915 are above 20 years age group. Apart from this, the number of RBFSWs is considerably higher in Dinajpur, Chattogram, Sylhet, and Cox's bazar. The analysis reveals that the total number of individuals involved in sex work across all districts is estimated to be 47,828, with the majority falling into the 20 years and above age group, indicating a situation requiring attention and intervention.

Table 3.4: Estimated size of residence-based FSWs by districts

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years & above
BARISHAL	Barisal	662	1,943	264	1,679
	Bhola	19	57	3	54
	Jhalokati	25	73	4	69
	Barguna	81	243	29	214
	Patuakhali	134	401	48	353
	Pirojpur	94	282	34	248
CHATTOGRAM	Chattogram	747	2,190	70	2,120
	Bandarban	27	80	4	76
	Chandpur	310	910	91	819
	Feni	108	315	16	299
	Khagrachhari	42	124	6	118
	Lakshmipur	117	342	17	325
	Noakhali	226	658	33	625

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years & above
	Rangamati	56	165	8	157
	Brahmanbaria	244	733	88	645
	Cumilla	391	1,147	270	877
	Cox's bazar	910	2,668	132	2,536
DHAKA	Dhaka	2,351	6,895	980	5,915
	Gazipur	43	125	16	109
	Narayanganj	659	1,978	257	1,721
	Faridpur	136	396	20	376
	Narsingdi	355	1,037	52	985
	Tangail	269	783	39	744
	Gopalganj	25	72	9	63
	Kishoregonj	237	712	85	627
	Madaripur	98	295	35	260
	Manikganj	141	424	51	373
	Munshiganj	133	398	48	350
	Rajbari	95	285	34	251
	Shariatpur	105	315	38	277
	KHULNA	Jessore	519	1,557	202
Khulna		439	1,316	171	1,145
Chuadanga		51	149	3	146
Jhenaidah		133	388	19	369
Magura		51	150	8	143
Meherpur		49	143	7	136
Narail		50	145	7	138
Satkhira		150	436	22	414
Bagerhat		128	383	46	337
Kushtia		63	184	22	162
MYMENSINGH		Mymensingh	875	2,624	341
	Jamalpur	132	386	19	367
	Sherpur	91	265	13	252
	Netrakona	151	453	54	399
RAJSHAHI	Rajshahi	502	1,506	196	1,310
	Joypurhat	66	192	10	182
	Natore	126	367	18	349
	Bogra	70	206	18	188
	Naogaon	70	206	25	181
	Chapai nababganj	151	454	54	400
	Pabna	235	705	85	620
	Sirajganj	263	770	92	678
RANGPUR	Dinajpur	771	2,261	261	2,000
	Gaibandha	164	477	24	453
	Kurigram	52	154	8	146
	Lalmonirhat	89	258	13	245
	Nilphamari	348	1,019	76	943
	Panchagarh	75	219	11	208
	Thakurgaon	97	284	14	270
	Rangpur	273	818	98	720
SYLHET	Sylhet	754	2,212	82	2,130
	Habiganj	140	407	20	387
	Sunamganj	63	186	3	183

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years & above
	Maulvibazar	167	502	60	442
Total		16,198	47,828	4,885	42,943

Note: The highlighted rows indicate districts from where the data was collected.

3.1.1.4 Size estimation of brothel-based FSWs (BBFSWs)

Table 3.5 shows the district-wise variation in the estimated number of BBFSWs. It is recognizable from the table that among the BBFSWs, which ranges from a minimum of 52 to 1525, their residence is the maximum in Daulatdia, Goalanda, Rajbari followed by Kandapara, Tangail. Among 3482 Brothel members, 2003 FSWs were above 25 years of age, whereas 1479 were below 25. Largely, the analysis highlights the significant presence of individuals involved in brothel activities across multiple locations in Bangladesh, with a greater number among those aged 25 and above.

Table 3.5: Estimated size of Female Sex Workers by brothels

Brothel	Age below 25 years	Age 25+ years	Total
Daulatdia, Goalanda, Rajbari	896	629	1525
Maroawary Mandir, Jashore	35	174	209
Kuchuyapotti, Bagerhat	22	30	52
Old Hospital Road, Patuakhali	56	84	140
C & B Ghat, Faridpur	61	109	170
Rathkhola, Faridpur	152	215	367
Ganginerpar, Mymensingh	89	211	300
Raniganj, Jamalpur	37	86	123
Kandapara, Tangail	104	399	503
Banishanta, Dacope, Khulna	27	66	93
Total	1479	2003	3482

Note: The highlighted rows indicate districts from where the data was collected.

Table 3.6 illustrates the distribution of upazilas and spots of FSWs across different districts included in mapping and size estimation. The study covered 22 districts, 129 upazilas (including wards within Dhaka city), and 2,047 FSW spots.

Table 3.6: Distribution of spots of FSWs across different districts included in MSE

Sl.	District	FSW Spots	Sl.	District	FSW Spots
1	Dhaka	831	12	Nilphamari	73
2	Chittagong	103	13	Rangamati	43
3	Sylhet	155	14	Sunamganj	24
4	Barisal	78	15	Kurigram	48
5	Gazipur	140	16	Naogaon	18
6	Dinajpur	77	17	Cumilla	37
7	Bhola	44	18	Cox's Bazar	61
8	Chandpur	39	19	Sirajganj	58
9	Jhalkathi	34	20	Gopalganj	50
10	Chuadanga	21	21	Bogra	75
11	Magura	21	22	Kushtia	17
Total					2,047

Men who have sex with men (MSM)

3.1.2 Mapping and size estimation of men who have sex with men (MSM)



Map 2: Estimated size of MSM by district

Map 3.2 shows the estimated size of MSM by district. Table 3.7 displays the estimated number of MSM and their age groups. The age group of 10-19 years indicates a minimum estimate of 8,301 and a point estimate of 24,308. The age group of 20-24 years shows a minimum estimate of 12,413 and a point estimate of 36,347. For ages 25 years and above, the minimum estimate is 19,070, and the point estimate is 55,842.

Table 3.7: Estimated number of MSM and their broad age groups

Typology	Age Distribution						Total	
	10-19 years		20-24 years		25 years and above		Minimum	Point estimate
	Minimum	Point estimate	Minimum	Point estimate	Minimum	Point estimate		
MSM	8,301	24,308	12,413	36,347	19,070	55,842	39,784	11,6498

3.1.2.1 Size estimation of MSM

Table 3.8 represents the division and district-wise variation in the estimated number of MSMs. It is evident from the table that among the MSMs, which range from a minimum of 85 to the point estimate of 11,386, their estimated number is the maximum in the Dhaka division followed by the Chattogram division. In the Dhaka division, the minimum size estimate is 4,654 with a point estimate of 11,386 where 2412 were in the 10 to 19 years age group and 8,974 in the above 20 years age group.

Table 3.8: Estimated size of MSM by district

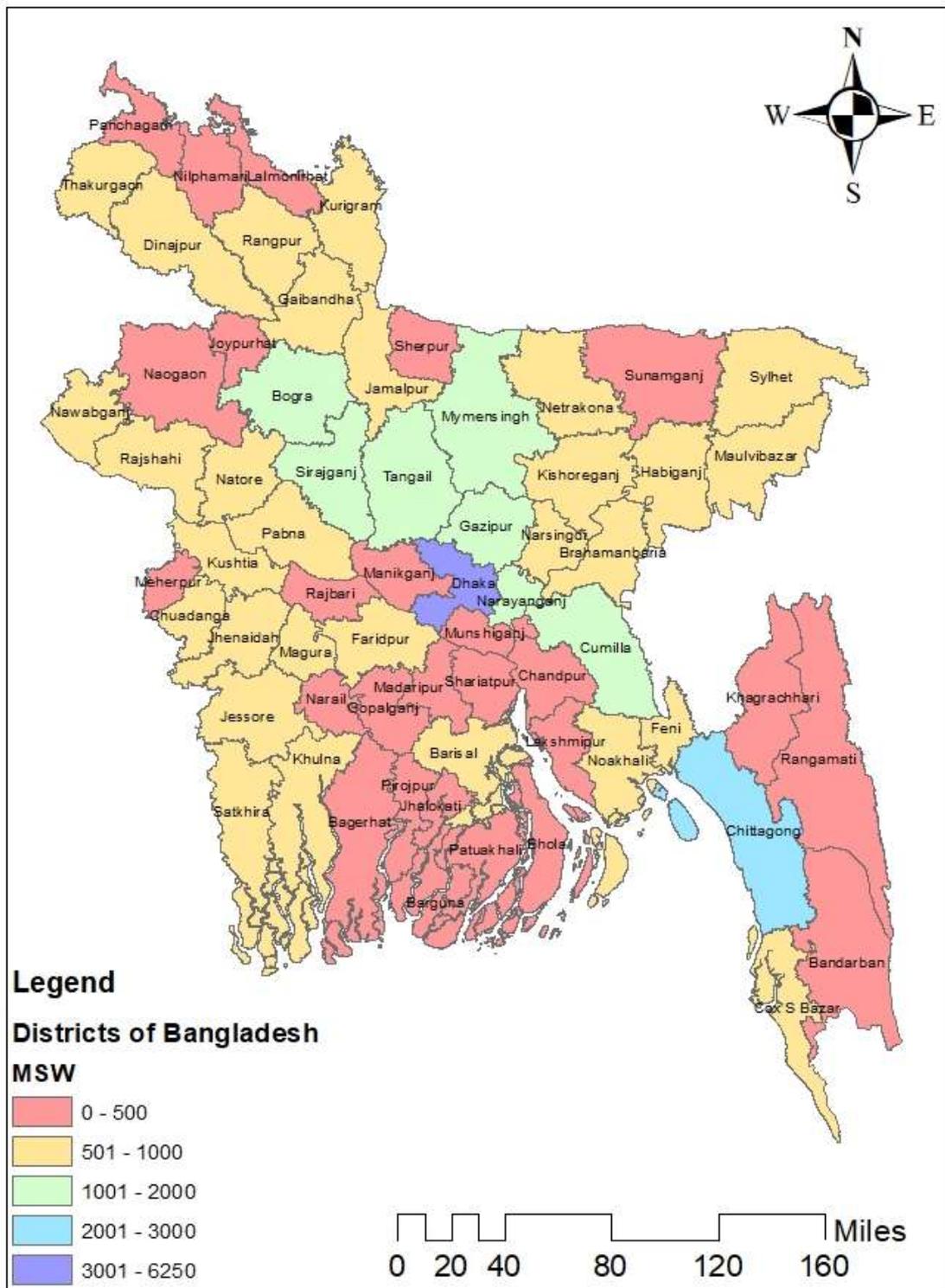
Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years and above
BARISHAL	Barisal	721	2,006	434	1,572
	Bhola	282	832	192	640
	Jhalokati	85	251	159	92
	Barguna	230	712	142	570
	Patuakhali	382	1,184	237	947
	Pirojpur	273	845	169	676
CHATTOGRAM	Chattogram	1,645	4,573	512	4,061
	Bandarban	122	378	91	287
	Chandpur	542	1,597	277	1,320
	Feni	412	1,274	306	968
	Khagrachhari	194	601	144	457
	Lakshmipur	421	1,237	297	940
	Noakhali	815	2,065	496	1,569
	Rangamati	265	781	136	645
	Brahmanbaria	647	2,005	401	1,604
	Cumilla	807	2,656	655	2,001
Cox's bazar	608	2,001	369	1,632	
DHAKA	Dhaka	4,654	11,386	2412	8,974
	Gazipur	1,891	5,257	1029	4,228
	Narayanganj	1,138	3,299	693	2,606
	Faridpur	548	1,693	406	1,287
	Narsingdi	658	2,033	488	1,545
	Tangail	1,039	3,211	771	2,440
	Gopalganj	639	1,303	269	1,034
	Kishoregonj	688	2,133	427	1,706
	Madaripur	282	874	175	699
Manikganj	405	1,255	251	1,004	

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years and above
	Munshiganj	405	1,255	251	1,004
	Rajbari	285	885	177	708
	Shariatpur	307	952	190	762
KHULNA	Jessore	812	2,354	494	1,860
	Khulna	709	2,056	432	1,624
	Chuadanga	492	1,450	268	1,182
	Jhenaidah	575	1,705	409	1,296
	Magura	534	1,573	239	1,334
	Meherpur	204	630	151	479
	Narail	197	609	146	463
	Satkhira	618	1,909	458	1,451
	Bagerhat	395	1,226	245	981
	Kushtia	492	1,620	326	1,294
	MYMENSINGH	Mymensingh	1,312	3,805	799
Jamalpur		619	1,914	459	1,455
Sherpur		372	1,151	276	875
Netrakona		497	1,542	308	1,234
RAJSHAHI	Rajshahi	820	2,377	499	1,878
	Joypurhat	284	877	210	667
	Natore	542	1,675	402	1,273
	Bogra	759	2,499	543	1,956
	Naogaon	245	807	178	629
	Chapai nababganj	445	1,380	276	1,104
	Pabna	730	2,262	452	1,810
	Sirajganj	733	2,414	300	2,114
RANGPUR	Dinajpur	633	1,760	389	1,371
	Gaibandha	653	1,938	465	1,473
	Kurigram	594	1,752	425	1,327
	Lalmonirhat	375	1,158	278	880
	Nilphamari	309	910	265	645
	Panchagarh	329	976	234	742
	Thakurgaon	427	1,268	304	964
SYLHET	Rangpur	695	2,153	431	1,722
	Sylhet	591	1,926	254	1,672
	Habiganj	558	1,724	414	1,310
	Sunamganj	353	1,041	118	923
	Maulavibazar	491	1,522	304	1,218
Total		39784	116498	24308	92189

Note: The highlighted rows indicate districts from where the data was collected.

Male Sex Worker (MSW)

3.1.3 Mapping and size estimation of male sex worker (MSW)



Map 3: Estimated size of MSW by district

Map 3.3 shows the estimated size of MSW by district. Table 3.9 displays the estimated number of MSWs and their age groups. The age group of 10-19 years indicates a minimum estimate of 4,838 and a point estimate of 8,426. The age group of 20-24 years shows a minimum estimate of 12,245 and a point estimate of 21,328. For ages 25 years and above, the minimum estimate is 10,874 and the point estimate is 18,940.

Table 3.9: Estimated number of MSW and their broad age groups

Typology	Age Distribution						Total	
	10-19 years		20-24 years		25 years and above		Minimum	Point estimate
	Minimum	Point estimate	Minimum	Point estimate	Minimum	Point estimate		
MSW	4,838	8,426	12,245	21,328	10,874	18,940	27,957	48,694

3.1.3.1 Estimate size of MSW by district

Table 3.10 describes the division and district-wise variation in the estimated number of MSWs. It is obvious from the table that among the MSWs, which ranges from a minimum of 89 to the point estimate of 6,250, their concentration is the maximum in the Dhaka division followed by the Chattogram division. In the Dhaka division, the minimum size estimate is 3,850 with a point estimate of 6,250 where 818 were in the 10 to 19 years' age group (point estimates) and 5,432 above 20 years age group.

Table 3.10: Estimated size of MSW by district

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years & above
BARISHAL	Barisal	461	774	134	640
	Bhola	180	330	81	249
	Jhalokati	150	275	57	218
	Barguna	138	276	52	224
	Patuakhali	229	458	87	371
	Pirojpur	164	327	62	265
CHATTOGRAM	Chattogram	1,639	2,601	240	2,361
	Bandarban	89	156	28	128
	Chandpur	240	439	79	360
	Feni	300	524	94	430
	Khagrachhari	141	247	44	203
	Lakshmipur	306	482	87	396
	Noakhali	593	830	149	680
	Rangamati	186	341	40	301
	Brahmanbaria	388	776	147	629
	Cumilla	581	1,106	251	855
Cox's bazar	422	803	99	704	
DHAKA	Dhaka	3,850	6,250	818	5,432
	Gazipur	1,148	1,929	343	1,586
	Narayanganj	796	1,251	250	1,001
	Faridpur	398	697	125	572
	Narsingdi	478	837	151	686
	Tangail	755	1,322	238	1,084

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)	
				10-19 years	20 years & above
	Gopalganj	307	467	107	361
	Kishoregonj	413	826	157	669
	Madaripur	169	338	64	274
	Manikganj	243	486	92	394
	Munshiganj	243	486	92	394
	Rajbari	171	342	65	277
	Shariatpur	184	368	70	298
KHULNA	Jessore	568	893	179	714
	Khulna	496	780	156	624
	Chuadanga	314	575	71	504
	Jhenaidah	418	731	132	599
	Magura	340	623	81	542
	Meherpur	148	259	47	212
	Narail	143	251	45	206
	Satkhira	449	786	141	645
	Bagerhat	237	474	90	384
	Kushtia	392	746	101	645
MYMENSINGH	Mymensingh	918	1,443	289	1,154
	Jalpur	450	788	142	646
	Sherpur	271	474	85	389
	Netrakona	298	597	113	484
RAJSHAHI	Rajshahi	574	901	180	721
	Joypurhat	206	361	65	296
	Natore	394	690	124	566
	Bogra	588	1,120	263	857
	Naogaon	101	192	55	137
	Chapai nababganj	267	534	101	433
	Pabna	438	876	166	710
RANGPUR	Sirajganj	530	1,009	110	899
	Dinajpur	419	703	169	534
	Gaibandha	475	831	150	681
	Kurigram	333	610	165	445
	Lalmonirhat	272	477	86	391
	Nilphamari	213	390	117	273
	Panchagarh	239	419	75	344
	Thakurgaon	311	544	98	446
SYLHET	Rangpur	417	833	158	675
	Sylhet	420	675	87	588
	Habiganj	406	710	128	582
	Sunamganj	255	466	38	428
	Maulavibazar	295	589	112	477
Total		27957	48694	8426	40268

Note: The highlighted rows indicate districts from where the data was collected.

Table 3.11: Distribution of spots of MSM and MSW across different districts included in MSE

Sl.	District	MSM & MSW Spots	Sl.	District	MSM & MSW Spots
1	Dhaka	339	12	Nilphamari	26
2	Chittagong	49	13	Rangamati	19
3	Sylhet	27	14	Sunamganj	21
4	Barisal	88	15	Kurigram	28
5	Gazipur	101	16	Naogaon	20
6	Dinajpur	59	17	Cumilla	31
7	Bhola	42	18	Cox's Bazar	34
8	Chandpur	24	19	Sirajganj	52
9	Jhalkathi	34	20	Gopalganj	54
10	Chuadanga	28	21	Bogra	54
11	Magura	22	22	Kushtia	30
Total					1182

People who Inject Drugs (PWID)

3.1.4 Mapping and size estimation of people who inject drugs (PWID)



Map 4: Estimated size of PWID by district

Table 3.12 displays the estimated number of PWID and their broad age groups. Among those between 10-19 years of age, the minimum estimate is 776 and a point estimate of 1036. The age group of 20-24 years shows a minimum estimate of 873 and a point estimate of 1165. For ages 25 years and above, the minimum estimate is 24102, and the point estimate is 32169.

Table 3.12: Estimated number of PWID and their broad age groups

Typology	Age Limit						Total	
	10-19 years		20-24 years		25 years and above		Minimum	Point estimate
	Minimum	Point estimate	Minimum	Point estimate	Minimum	Point estimate		
PWID	776	1036	873	1165	24102	32169	25751	34370

3.1.4.1 Estimated Size of PWID by Districts

Table 3.13 below illustrates the division and district-wise variation in the estimated number of PWIDs. It is discernible from the table that among the PWIDs, which ranges from a minimum of 49 to the point estimate of 6716, with 210 female PWIDs. Their number is highest in the Dhaka division followed by the Rangpur division. In the Dhaka division, the minimum size estimate is 5,083 with a point estimate of 6,716 where 192 in the 10 to 19 years' age group, and 6,524 in the 20 years and above age group.

Table 3.13: Estimated size of PWID by districts

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)		
				10-19 years	20 years and above	*Female PWID
BARISHAL	Barisal	471	601	3	598	-
	Bhola	89	117	1	116	-
	Jhalokati	217	287	12	275	-
	Barguna	138	161	13	148	-
	Patuakhali	229	267	21	246	-
	Pirojpur	164	191	15	176	-
CHATTOGRAM	Chattogram	636	850	28	822	-
	Bandarban	78	111	1	110	-
	Chandpur	518	685	3	682	-
	Feni	262	375	4	371	-
	Khagrachhari	124	177	2	175	-
	Lakshmipur	268	383	4	379	-
	Noakhali	518	741	7	734	-
	Rangamati	87	115	1	114	-
	Brahmanbaria	155	181	14	167	-
	Cumilla	690	933	50	883	-
Cox's bazar	85	115	12	103	-	
DHAKA	Dhaka	5083	6716	192	6524	210
	Gazipur	531	702	11	691	30
	Narayanganj	796	1,138	9	1129	48
	Faridpur	261	374	4	370	-
	Narsingdi	377	478	5	474	-
	Tangail	331	472	5	467	-
	Gopalganj	214	289	23	266	-
	Kishoregonj	413	482	39	443	-
	Madaripur	169	197	16	181	-
	Manikganj	243	283	23	260	-
	Munshiganj	243	283	23	260	-
	Rajbari	171	200	16	184	-

Division	District	Minimum Size estimate	Point estimate	Point Estimate (Age Segregation)		
				10-19 years	20 years and above	*Female PWID
	Shariatpur	184	215	17	198	-
KHULNA	Jessore	568	812	6	806	-
	Khulna	496	709	6	703	-
	Chuadanga	339	448	1	447	-
	Jhenaidah	256	365	4	362	-
	Magura	255	337	1	336	-
	Meherpur	130	185	2	183	-
	Narail	125	179	2	177	-
	Satkhira	393	562	6	556	-
	Bagerhat	213	249	20	229	-
	Kushtia	454	613	4	609	-
MYMENSINGH	Mymensingh	918	1,312	10	1302	-
	Jamalpur	395	563	6	557	-
	Sherpur	237	339	3	336	-
	Netrakona	298	348	28	320	-
RAJSHAHI	Rajshahi	574	902	7	895	6
	Joypurhat	181	258	3	255	-
	Natore	345	493	5	488	-
	Bogra	417	563	97	466	-
	Naogaon	380	514	74	440	-
	Chapai nababganj	267	312	25	287	-
	Pabna	438	511	41	470	-
	Sirajganj	431	583	14	569	-
RANGPUR	Dinajpur	941	1202	5	1197	23
	Gaibandha	416	594	6	588	-
	Kurigram	342	452	7	445	-
	Lalmonirhat	238	340	3	337	-
	Nilphamari	294	389	1	387	-
	Panchagarh	209	299	3	296	-
	Thakurgaon	272	311	3	308	-
	Rangpur	417	486	39	447	-
SYLHET	Sylhet	233	326	6	320	-
	Habiganj	249	355	4	351	-
	Sunamganj	49	64	1	63	-
	Maulvibazar	236	275	22	253	-
Total		25751	34370	1,036	33334	317

* Female PWID was observed in 5 districts.

Note: The highlighted rows indicate districts from where the data was collected.

Table 3.14 illustrates the Distribution of Upazilas and Spots of PWID across different districts included in Mapping and Size Estimation. The study covered 22 districts, 127 upazilas (including wards within Dhaka city), and 844 PWID spots.

Table 3.14: Distribution of spots of PWIDs across different districts included in MSE

Sl.	District	PWID Spots	Sl.	District	PWID Spots
1	Dhaka	206	12	Nilphamari	31
2	Chittagong	43	13	Rangamati	20
3	Sylhet	20	14	Sunamganj	46

Sl.	District	PWID Spots	Sl.	District	PWID Spots
4	Barisal	71	15	Kurigram	33
5	Gazipur	28	16	Naogaon	14
6	Dinajpur	35	17	Cumilla	43
7	Bhola	16	18	Cox's Bazar	24
8	Chandpur	16	19	Sirajganj	38
9	Jhalkathi	27	20	Gopalganj	53
10	Chuadanga	24	21	Bogra	30
11	Magura	26	22	Kushtia	31
Total					844

3.1.5 Size estimation of Hijra population

In 2022, the Government of Bangladesh estimated the size of the Hijra population for the whole country, which was found to be 12,629 [22]. Since the study was conducted recently, the current study only validated the government's estimates by collecting data from 13 districts using the Bland-Altman method.

3.1.5.1 Validation of the government's data on Hijra population size by Bland-Altman method

To validate the size of the Hijra population estimated by the government in 2022, data of the Hijra population were collected from 13 districts under the current mapping study. Table 3.15 shows the size of the Hijra population estimated by the government and the current study, including the differences in estimates. Data show that there are few differences between two estimates, with a mean difference of only 1.07 (Table 3.16), which is negligible. A Bland-Altman plot was generated to validate the two estimates, as shown in Figure 3. The figure shows that all the data points are within the acceptable range of ± 1.96 SD, except for one district (Dhaka district). It is, therefore, concluded that the government's estimates of the Hijra population are more or less valid.

Table 3.15 Size of the Hijra population estimated by the government & the current study

Sl	District	Government's estimates	Current survey estimates	Difference
1	Barisal	151	155	-4
2	Bhola	129	124	5
3	Jhalokati	40	48	-8
4	Dhaka	2,185	2,108	77
5	Gazipur	599	612	-13
6	Bogra	433	425	8
7	Naogaon	173	182	-9
8	Sirajganj	282	298	-16
9	Dinajpur	162	156	6
10	Kurigram	91	93	-2
11	Nilphamari	80	76	4
12	Sunamganj	223	243	-20
13	Sylhet	284	298	-14
Total:		4,832	4,818	14

Table 3.16 Difference in means of the Hijra population between the government's estimate and the current survey estimate in 13 selected districts

Description	Government's data	Current survey data	Difference (govt. minus survey)
No. of districts	13	13	13
Mean	371.69	370.62	1.0769
Std. Deviation	566.149	544.935	24.56441
Minimum	40	48	-20.00
Maximum	2185	2108	77.00
Sum	4,832	4,818	14.00

Bland-Altman plot of agreement between the government's estimate and current survey estimates on the Hijra population in 13 districts.

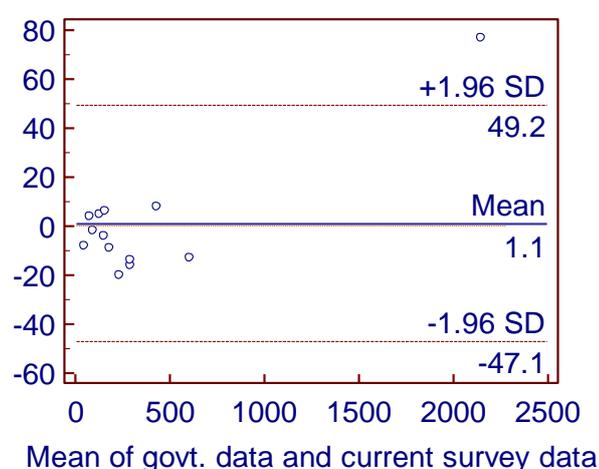


Figure 3: Bland-Altman plot for the estimation of the Hijra population

Table 3.17: Estimated size of Hijra population by districts

Sl	District	Hijra Population	Sl	District	Hijra Population
1	Dhaka	2,185	33	Natore	116
2	Chattogram	645	34	Gaibandha	195
3	Sylhet	284	35	Kurigram	91
4	Barisal	151	36	Lalmonirhat	66
5	Gazipur	599	37	Nilphamari	80
6	Mymensingh	471	38	Panchagarh	43
7	Narayanganj	364	39	Thakurgaon	67
8	Jessore	195	40	Habiganj	189
9	Khulna	228	41	Sunamganj	223
10	Rajshahi	223	42	Barguna	96
11	Dinajpur	162	43	Patuakhali	93
12	Bhola	129	44	Pirojpur	54
13	Jhalokati	40	45	Brahmanbaria	202
14	Bandarban	17	46	Cumilla	373
15	Chandpur	132	47	Cox's bazar	173
16	Feni	84	48	Gopalganj	65
17	Khagrachhari	51	49	Kishoregonj	225
18	Lakshmipur	118	50	Madaripur	79
19	Noakhali	198	51	Manikganj	107

Sl	District	Hijra Population	Sl	District	Hijra Population
20	Rangamati	33	52	Munshiganj	93
21	Faridpur	151	53	Netrakona	219
22	Jamalpur	170	54	Rajbari	95
23	Narsingdi	178	55	Shariatpur	87
24	Sherpur	112	56	Bagerhat	90
25	Tangail	349	57	Kushtia	124
26	Chuadanga	93	58	Bogra	433
27	Jhenaidah	148	59	Naogaon	173
28	Magura	48	60	Chapai nababganj	88
29	Meherpur	39	61	Pabna	165
30	Narail	43	62	Sirajganj	282
31	Satkhira	140	63	Rangpur	225
32	Joypurhat	94	64	Maulavibazar	144
Total					12,629

3.1.6 Findings of the validation exercise:

Findings from Spots validation-

Based on the mapping and size estimation, a total of 177 spots were visited by the validation team. Among the spots 50 spots were FSWs, 45 spots for MSM and MSW and 37 spots for PWID in four districts.

Table 3.18: Name of districts and number of spots decided for validation.

District Name	FSW	MSM	MSW	PWID	Total
Cumilla	10	7	7	6	30
Gazipur	10	13	13	9	45
Gopalganj	11	10	10	8	39
Kurigram	19	15	15	14	63
Total	50	45	45	37	177

After completion of the data collection by the field research team, the validation team visited the spots and classified all spots into the following three categories-

- Spots recorded by mapping teams and could be traced by the validation team (+/+) were classified as matched spots;
- Spots recorded by mapping teams but could not be traced by the validation team (+/-) were classified as missed spots; and
- Spots not recorded by mapping teams but could be traced by the validation team were classified as new spots (-/+).

A comprehensive listing of all spots, including major landmarks, was conducted as per the research team's protocol. Classification of spots was done based on matching with the identification by the research team, and was categorized as matched, or new. Data on the number of key populations of all typologies from the spots in each location were collected. 168 out of 177 spots were matched, 9 spots were missed, and 8 new spots were identified.

Table 3.19: Status of KPs specific spots during mapping and validation

KP Typology	Spot Visited	Matched Spots	Missed Spots	New Spots
FSW	50	46	3	3
MSM	45	43	2	2
MSW	45	43	2	2
PWID	37	36	2	1
Total	177	168	9	8

To validate the KP size, the survey used the capture-recapture (CRC) method in four districts (Cumilla, Gazipur, Gopalganj, and Kurigram) and the multiplier method in two districts (Cumilla and Gazipur). The size of the Hijra population was validated in 13 districts by the Bland-Altman method as described earlier in Section 3.1.5.1.

Validation of KP size by capture-recapture method

To estimate the size of KP groups by the capture-recapture (CRC) method, data were collected from selected spots in four districts. Table 3.20 shows the number of KP groups in the first and second captures. Using the standard method, as described in methodology section, the size of each KP group was estimated and compared with the KP size estimated by MSE. If the estimates by the MSE data fall within the range (95% CI) of minimum (lower limit) and point (upper limit) estimates derived by the CRC method, they were considered valid.

Findings from capture-recapture method:

Table 3.20: CRC data collection from four districts

KPs	Cumilla District			Gazipur District			Gopalganj District			Kurigram District		
	1st Capture	2nd Capture		1st Capture	2nd Capture		1st Capture	2nd Capture		1st Capture	2nd Capture	
		New	Re-capture		New	Re-capture		New	Re-capture		New	Re-capture
FSW	180	122	58	153	116	37	126	77	49	120	58	62
MSM	77	64	13	59	48	11	60	43	17	66	55	11
MSW	61	50	11	62	44	18	44	26	18	84	60	24
PWID	140	108	32	128	60	68	64	35	29	92	66	26

Table 3.21 shows that the size of FSWs, estimated by the CRC method in Cumilla district, is 559, with the lower limit (minimum estimate) of 462 and the upper limit (point estimate) of 656. The estimate made by the MSE is 492, which is within the range of the minimum and point estimates. Therefore, the estimate made by the mapping study (MSE data) were valid. Similarly, when compared to the other KP sizes estimated by the mapping study, all the mapping estimates were valid except for PWID in Gazipur district. In Gazipur district, the estimated size of PWID in the CRC method is 241, with lower and upper limits of 214 and 268, respectively. However, the size of PWID estimated by MSE in the district is a bit higher (278) than the upper limit (268) of the estimate made by the CRC method.

Table 3.21: Comparison of CRC Results (Lower Limit and Upper Limit) and MSE Data for four districts (the upper and lower limits are the 95% CIs of the estimates of the CRC method).

KPs	N (Population Size)	Lower Limit	Upper Limit	MSE Data	N (Population Size)	Lower Limit	Upper Limit	MSE Data
	Cumilla District				Gazipur District			
FSW	559	462	656	492	633	478	788	690

KPs	N (Population Size)	Lower Limit	Upper Limit	MSE Data	N (Population Size)	Lower Limit	Upper Limit	MSE Data
MSM	456	250	662	618	316	164	468	412
MSW	338	174	502	432	214	144	284	260
PWID	613	449	777	630	241	214	268	278
Gopalganj District					Kurigram District			
FSW	324	269	379	305	232	204	260	209
MSM	212	140	284	260	396	201	591	492
MSW	108	79	137	119	294	210	378	245
PWID	141	113	169	118	326	236	416	328

Validation of KP size by multiplier method

Like the CRC method, the KP size estimated by the MSE was validated in two districts (Cumilla and Gazipur) by the multiplier method as described in the methodology section. To validate the data, the KP size estimated by the multiplier method was compared with the size estimated by the MSE. If the estimate of the multiplier method falls within the range of the minimum and point estimates derived from the mapping data, it is considered valid.

Table 3.22 shows the estimated size of all KP groups calculated by the multiplier method and the minimum value and point estimate derived from the MSE. The table shows that the estimates made by the multiplier method are within the range of minimum and point estimate values for all KP groups in Cumilla district. However, in Gazipur district, the estimates made by the multiplier method are within the range of minimum and point estimate values for MSM and MSWs, but outside the range for FEWs and PWIDs.

Findings from multiplier method from Cumilla and Gazipur districts

Table 3.22: Data from multiplier method in Cumilla district

KPs	No. of surveyed (Sample)	No. received services (calculated from survey)	% of KP received services calculated from survey (sample) [A]	Total No. of KP received services as recorded in the DIC register [B]	Estimated Total size (using Multiplier Method) [B/A]	KP size using MSE	
						Min. value	Point estimate (without hidden factor)
FSW	180	146	0.81	391	482	333	492
MSM	77	52	0.68	267	395	383	618
MSW	61	32	0.52	172	328	307	432
PWID	140	118	0.84	518	615	548	630

Table 3.23: Data from multiplier method in Gazipur district

KPs	No. of surveyed (Sample)	No. received services (calculated from survey)	% of KP received services calculated from survey (sample) [A]	Total No. of KP received services as recorded in the DIC register [B]	Estimated Total size (using Multiplier Method) [B/A]	KP size using MSE	
						Min. value	Point estimate (without hidden factor)
FSW	153	137	0.90	761	850	474	690
MSM	59	37	0.63	174	277	256	412
MSW	62	48	0.77	166	214	203	260
PWID	128	106	0.83	331	400	239	278



**QUANTITATIVE FINDINGS OF THE HIV RISK
BEHAVIOR SURVEY**

3.2 Quantitative findings of the HIV risk behavior survey

3.2.1 Female Sex Workers (FSWs)

3.2.1.1 Background Characteristics

In total, data were collected from 827 female sex workers (FSWs), of whom 109 were residence-based (RB), 264 were street-based (SB), 122 were hotel-based (HB), and 322 were brothel-based (BB) FSWs. Table 3.24 shows the background characteristics by category of FSWs. Overall, the mean age of FSWs was 30.7 years. About 80% of FSWs were more than 24 years old, while a negligible proportion were less than 20. Brothel-based FSWs were relatively younger (with a mean age of 28.4 years) than the other categories of FSWs.

Overall, about a quarter (27.4%) did not have any education, while about half (48.1%) completed up to five years of education. About a quarter of the FSWs (22.1%) were currently married, and more than half (53.9%) of them were either divorced, separated, or widowed. Half of the FSWs were living with their husbands.

Table 3.24: Background characteristics of female sex workers by categories

Characteristics	RBFSW		SBFSW		HBFSW		BBFSW		All FSW	
	n	%	n	%	n	%	n	%	n	%
Age (Years)										
<20	5	4.6	8	3.0	1	0.8	21	6.3	35	4.2
20-24	14	12.8	27	10.2	6	4.9	85	25.6	132	16.0
>24	90	82.6	229	86.7	115	94.3	226	68.1	660	79.8
Mean (SD)	31.5 (7.7)		32.4 (7.6)		32.5 (5.7)		28.4 (6.5)		30.7 (7.2)	
Education										
No education	21	19.3	81	30.7	34	27.9	91	27.4	227	27.4
Primary	54	49.5	129	48.9	57	46.7	158	47.6	398	48.1
Secondary and above	34	31.2	54	20.5	31	25.4	83	25.0	202	24.4
Marital status										
Unmarried	12	11.0	45	17.0	8	6.6	123	37.0	188	22.7
Currently married	33	30.3	76	28.8	29	23.8	45	13.6	183	22.1
Divorced/separated/widowed	64	58.7	143	54.2	85	69.7	154	46.4	446	53.9
Did not answer	0	0.0	0	0.0	0	0.0	10	3.0	10	1.2
Living with husband										
Yes	76	69.7	121	45.8	49	40.2	181	54.5	427	51.6
No	33	30.3	143	54.2	73	59.8	135	40.7	384	46.4
Did not answer	0	0.0	0	0.0	0	0.0	16	4.8	16	1.9
Total	109		264		122		332		827	

3.2.1.2. Sexual and risk behaviors

Overall, about two-thirds (62.8%) of FSWs had their first sex before the age of 15, and the proportion was lowest (45.2%) among brothel-based FSWs (BBFSWs) and highest (77.9%) among hotel-based FSWs (HBFSWs) (Table 3.25). The majority (70.5%) of those who did not have any education had their first sex before the age of 15 years. Data show that the higher the level of education, the lower the exposure to sex at an early age.

Table 3.25: Distribution of age at first sex by type of FSW and background characteristics

Characteristics	Age at first sex: years							
	<= 15		16-17		18 & above		Total	
	n	%	n	%	n	%	n	%
Type of FSW								
RBFSW	73	67.0	26	23.9	10	9.2	109	100.0
SBFSW	201	76.1	45	17.0	18	6.8	264	100.0
HBFSW	95	77.9	15	12.3	12	9.8	122	100.0
BBFSW	150	45.2	115	34.6	67	20.2	332	100.0
Age (Years)								
<20	23	65.7	10	28.6	2	5.7	35	100.0
20-24	80	60.6	37	28.0	15	11.4	132	100.0
>24	416	63.0	154	23.3	90	13.6	660	100.0
Education								
No education	160	70.5	49	21.6	18	7.9	227	100.0
Primary	246	61.8	103	25.9	49	12.3	398	100.0
Secondary and above	113	55.9	49	24.3	40	19.8	202	100.0
Total	519	62.8	201	24.3	107	12.9	827	100.0

Table 3.26 shows the distribution of age at entry into sex work by type of FSW. The average age at first entry into sex work was 20.7 years. The BBFSWs engaged in sex work earlier (at the age of 17.8 years on average) than the other categories of FSWs. Overall, half (50.5%) of FSWs started sex work before the age of 20, and the proportion was highest (78.3%) for BBFSWs. The average duration of FSWs engaged in the sex trade was about 10 years, and about half (46.6%) of FSWs were engaged in sex work for more than 10 years.

Table 3.26: Entry into Sex Work by background characteristics and types of FSW

Characteristics	RBFSW		SBFSW		HBFSW		BBFSW		All FSW	
	n	%	n	%	n	%	n	%	n	%
Age at entry to sex work										
<20 years	39	35.8	94	35.6	25	20.5	260	78.3	418	50.5
20-24 years	43	39.4	78	29.5	47	38.5	65	19.6	233	28.2
>24 years	27	24.8	92	34.8	50	41.0	7	2.1	176	21.3
Mean (SD)	21.4 (5.4)		22.8 (6.3)		23.6 (5.5)		17.8 (2.7)		20.7 (5.5)	
Duration in sex trade										
<5 years	20	18.3	44	16.7	27	22.1	65	19.6	156	18.9
5-10 years	38	34.9	102	38.6	50	41.0	96	28.9	286	34.6
>10 years	51	46.8	118	44.7	45	36.9	171	51.5	385	46.6
Mean (SD)	10.0 (6.0)		9.6 (5.7)		8.8 (5.5)		10.5 (6.6)		9.9 (6.1)	
Total	109		264		122		332		827	

Table 3.27 shows the extent and frequency of sex work and the number of clients by category of FSW. The FSWs, on average, were engaged in sex work for more than five days a week, and the distribution was similar for all categories of FSW. The overwhelming majority (94.2%) of FSWs had more than 6 partners a week to have sex with money, and 98.1% had up to 3 partners a week to have sex without money. The average number of clients FSWs had on the day before data collection was 5.1, and about 40% had 6 or more partners on the day before data collection.

Table 3.27: Frequency & extent of sex work last week and day before data collection by category of FSWs

Indicators	RBFSW		SBFSW		HBFSW		BBFSW		All FSW	
	n	%	n	%	n	%	n	%	n	%
No. of days sold sex last week										
Up to 3 days	26	23.9	31	11.7	13	10.7	0	0.0	70	8.5
4-5 days	63	57.8	116	43.9	36	29.5	11	3.3	226	27.3
6 or more days	20	18.3	117	44.3	73	59.8	321	96.7	531	64.2
Mean (SD)	4.4 (1.2)		4.4 (1.2)		5.6 (1.3)		6.8 (0.4)		5.7 (1.3)	
Had sex with number of partners with money or gift last week										
Up to 3	6	5.5	10	3.8	3	2.5	1	0.3	20	2.4
4 to 5	16	14.7	5	1.9	2	1.6	5	1.5	28	3.4
6 or more	87	79.8	249	94.3	117	95.9	326	98.2	779	94.2
Mean (SD)	11.5 (7.9)		21.0 (13.2)		26.4 (13.2)		26.8 (13.3)		22.9 (13.8)	
Had sex with number of partners without money or gift last week										
Up to 3	105	96.3	259	98.1	121	99.2	326	98.2	811	98.1
4 to 5	4	3.7	4	1.5	1	0.8	3	0.9	12	1.5
6 or more	0	0.0	1	0.4	0	0.0	3	0.9	4	0.5
Mean (SD)	1.04 (0.18)		1.02 (0.17)		1.01 (0.09)		1.03 (0.21)		1.02 (0.18)	
Total number of sex partners last week										
Up to 10	61	56.0	53	20.1	17	13.9	39	11.7	170	20.6
11 to 20	33	30.3	75	28.4	12	9.8	51	15.4	171	20.7
>20	15	13.8	136	51.5	93	76.2	242	72.9	486	58.8
Mean (SD)	11.8 (8.0)		21.4 (13.3)		26.7 (13.3)		26.8 (13.1)		23.1 (13.6)	
Number of sex partners yesterday										
Up to 3	90	82.6	88	33.3	29	23.8	87	26.2	294	35.6
4 to 5	9	8.3	64	24.2	24	19.7	113	34.0	210	25.4
6 or more	10	9.2	112	42.4	69	56.6	132	39.8	323	39.1
Mean (SD)	2.6 (3.3)		5.5(3.9)		6.4 (4.3)		5.1 (2.3)		5.1 (3.5)	
Total	109		264		122		332		827	

3.2.1.3 Contraceptive use

Table 3.28 shows the distribution of contraceptive use by category of FSW and their background characteristics. Overall, the overwhelming majority (86.7%) reported that they were using contraceptives. The use of contraceptives was lowest (70.5%) among BBFSWs, and the distribution of contraceptive use by education was more or less similar. The most commonly used contraceptive method was condoms (66.2%) (Table 3.29).

Table 3.28: Use of contraceptives by type of FSWs and background characteristics

Characteristics	Use contraceptives		Don't use		No Answer		No. of FSW	
	n	%	n	%	n	%	n	%
Type of FSWs								
RBFSW	109	100.0	0	0.0	0	0.0	109	100.0
SBFSW	254	96.2	10	3.8	0	0.0	264	100.0
HBFSW	120	98.4	2	1.6	0	0.0	122	100.0
BBFSW	234	70.5	85	25.6	13	3.9	332	100.0
Age (Years)								
<20	31	88.6	4	11.4	0	0.0	35	100.0
20-24	116	87.9	16	12.1	0	0.0	132	100.0
>24	570	86.4	77	11.7	13	2.0	660	100.0

Characteristics	Use contraceptives		Don't use		No Answer		No. of FSW	
	n	%	n	%	n	%	n	%
Education								
No education	205	90.3	22	9.7	0	0.0	227	100.0
Primary	335	84.2	55	13.8	8	2.0	398	100.0
Secondary and above	177	87.6	20	9.9	5	2.5	202	100.0
Total	717	86.7	97	11.7	13	1.6	827	100.0

Table 3.29: Types of contraceptives used by category of FSW

Characteristics	Oral pill		Condom		Injection		Others		Total	
	n	%	n	%	n	%	n	%	n	%
Type of FSWs										
RBFSW	10	9.2	72	66.1	19	17.4	8	7.3	109	100.0
SBFSW	15	5.9	197	77.6	32	12.6	10	3.9	254	100.0
HBFSW	9	7.5	104	86.7	6	5.0	1	0.8	120	100.0
BBFSW	57	24.4	102	43.6	63	26.9	12	5.1	234	100.0
Total	91	12.7	475	66.2	120	16.7	31	4.3	717	100.0

3.2.1.4 STI symptoms and health-seeking behavior

Table 3.30 shows the distribution of STI symptoms during the last 12 months before data collection by category of FSW and their background characteristics. More than a quarter reported having any STI symptoms during the last 12 months before data collection. The prevalence of STI symptoms was highest among RBFSWs (44.0%) and those who were less than 20 years of age (34.3%). The most common type of STI symptom, as reported by FSWs, was urethral discharge (81.5%). However, about a third also reported having anal discharge (32.4%) and genital ulcers (37.8%) (Table 3.31).

Table 3.30: STI Symptoms within 12 Months before data collection by Category of FSW and their Background Characteristics

Characteristics	Had STI symptoms		Did not have STI symptoms		No. of FSW	
	n	%	n	%	n	%
Type of FSWs						
RBFSW	48	44.0	61	56.0	109	100.0
SBFSW	65	24.6	199	75.4	264	100.0
HBFSW	16	13.1	106	86.9	122	100.0
BBFSW	92	27.7	240	72.3	332	100.0
Age (Years)						
<20	12	34.3	23	65.7	35	100.0
20-24	39	29.5	93	70.5	132	100.0
>24	170	25.8	490	74.2	660	100.0
Education						
No education	67	29.5	160	70.5	227	100.0
Primary	110	27.6	288	72.4	398	100.0
Secondary and above	44	21.8	158	78.2	202	100.0
Marital status						
Unmarried	47	25.0	141	75.0	188	100.0
Currently married	50	27.3	133	72.7	183	100.0
Divorced/separated/ widowed	124	27.8	322	72.2	446	100.0
Did not answer	0	0.0	10	100.0	10	100.0
Total	221	26.7	606	73.3	827	100.0

Table 3.31: Prevalence of STI Symptoms within 12 months before data collection by Category of FSW

STI symptoms	RBFSW		SBFSW		HBFSW		BBFSW		All FSW	
	n	%	n	%	n	%	n	%	n	%
Urethral discharge	44	91.7	61	92.4	10	62.5	66	71.7	181	81.5
Anal discharge	38	79.2	27	40.9	7	43.8	0	0.0	72	32.4
Genital ulcer or sore	28	58.3	21	31.8	9	56.3	26	28.3	84	37.8

Table 3.32 shows the treatment-seeking behaviors of FSWs for STI symptoms by category of FSW and their background characteristics. The overwhelming majority (94.1%) of FSWs reported that they visited health facilities for the treatment of STI symptoms, and the distribution of seeking treatment by background characteristics was similar.

Table 3.32: Treatment seeking behavior of FSWs for STI symptoms

Characteristics	Visited health facility for STI symptoms		Did not seek treatment		No. of FSW	
	n	%	n	%	n	%
Type of FSWs						
RBFSW	47	95.9	2	4.1	49	100.0
SBFSW	57	87.7	8	12.3	65	100.0
HBFSW	14	87.5	2	12.5	16	100.0
BBFSW	90	97.8	2	2.2	92	100.0
Age (Years)						
<20	12	100.0	0	0.0	12	100.0
20-24	35	89.7	4	10.3	39	100.0
>24	161	94.7	9	5.3	170	100.0
Education						
No education	63	94.0	4	6.0	67	100.0
Primary	103	93.6	7	6.4	110	100.0
Secondary and above	42	95.5	2	4.5	44	100.0
Marital status						
Unmarried	44	93.6	3	6.4	47	100.0
Currently married	48	96.0	2	4.0	50	100.0
Divorced/separated/ widowed	116	93.5	8	6.5	124	100.0
Total	208	94.1	13	5.9	221	100.0

3.2.1.5 Use of condoms and client loads

Table 3.33 shows the distribution of condom use in the last sex. Overall, about two-thirds (64.7%) used condoms in the last sex. The condom use rate was highest among the HBFSWs (86.1%) and lowest among the BBFSWs (42.2%). The distribution of condom use by background characteristics was more or less similar. Among those who used condoms in the last sex, the use of condoms was decided mainly (84.7%) by the FSWs themselves.

Table 3.33: Use of Condoms in Last Sex by Category of FSWs and Background Characteristics

Characteristics	Used condom in last sex		Did not use		Don't know		Did not answer		No. of FSW	
	n	%	n	%	n	%	n	%	n	%
Type of FSWs										
RBFSW	82	75.2	27	24.8	0	0.0	0	0.0	109	100.0
SBFSW	208	78.8	56	21.2	0	0.0	0	0.0	264	100.0

Characteristics	Used condom in last sex		Did not use		Don't know		Did not answer		No. of FSW	
	n	%	n	%	n	%	n	%	n	%
HBFSW	105	86.1	17	13.9	0	0.0	0	0.0	122	100.0
BBFSW	140	42.2	119	35.8	59	17.8	14	4.2	332	100.0
Age (Years)										
<20	21	60.0	11	31.4	3	8.6	0	0.0	35	100.0
20-24	82	62.1	43	32.6	5	3.8	2	1.5	132	100.0
>24	432	65.5	165	25.0	51	7.7	12	1.8	660	100.0
Education										
No education	154	67.8	64	28.2	9	4.0	0	0.0	227	100.0
Primary	244	61.3	109	27.4	34	8.5	11	2.8	398	100.0
Secondary and above	137	67.8	46	22.8	16	7.9	3	1.5	202	100.0
Marital status										
Unmarried	122	64.9	40	21.3	21	11.2	5	2.7	188	100.0
Currently married	115	62.8	57	31.1	9	4.9	2	1.1	183	100.0
Divorced/separated/ widowed	298	66.8	121	27.1	24	5.4	3	0.7	446	100.0
did not answer	0	0.0	1	10.0	5	50.0	4	40.0	10	100.0
Total	535	64.7	219	26.5	59	7.1	14	1.7	827	100.0
Who suggested to use condom: (n=535)										
Myself	453	84.7	0	0.0	0	0	0	0	453	84.7
Partner	82	15.3	0	0.0	0	0	0	0	82	15.3
Total	535	100.0	0	0.0	0	0	0	0	535	100.0

Table 3.34 shows the client loads and use of condoms by FSWs in the last week before data collection. On average, FSWs served 24 clients in the last week before data collection, and the number of clients was highest for BBFSWs (27.9) and HBFSWs (27.7) and overall, more than half of FSWs (56.5%) had more than 20 clients in the last week, and 44.0% said that they used condoms more than 20 times in the last week.

Table 3.34: Number of sex partners and use of condoms in the last week before data collection by category of FSW

Characteristics	RBFSW		SBFSW		HBFSW		BBFSW		All FSW	
	n	%	n	%	n	%	n	%	n	%
No. of sex partners in the last week before data collection										
Up to 10	49	45.0	39	14.8	17	13.9	42	12.7	147	17.8
11 to 20	47	43.1	93	35.2	14	11.5	59	17.8	213	25.8
>20	13	11.9	132	50.0	91	74.6	231	69.6	467	56.5
Mean (SD)	12.2 (9.4)		22.5 (12.4)		27.7 (12.9)		27.9 (13.2)		24.0 (13.5)	
No. of times used condoms										
Up to 10	62	56.9	65	24.6	16	13.1	90	27.1	233	28.2
11 to 20	34	31.2	73	27.7	28	23.0	95	28.6	230	27.8
>20	13	11.9	126	47.7	78	63.9	147	44.3	364	44.0
Mean (SD)	12.5 (16.0)		21.6 (13.7)		30.5 (24.4)		22.3 (16.7)		22.5 (17.7)	
Total	109		264		122		332		827	

3.2.1.6 Awareness of HIV testing centers and HIV testing status

Table 3.35 shows awareness of FSWs about HIV testing centers by category of FSW and their background characteristics. The overwhelming majority (88.0%) of FSWs were aware of HIV testing centers. The BBFSWs were more aware (93.4%) of HIV testing centers than the other category of

FSWs. The distribution of awareness was more or less homogeneous among the age groups and level of education of FSWs.

Table 3.35: Awareness of FSWs about HIV testing centers by their category

Characteristics	Aware of HIV testing center		Not aware		No. of FSW	
	n	%	n	%	n	%
Type of FSWs						
RBFSW	95	87.2	14	12.8	109	100.0
SBFSW	221	83.7	43	16.3	264	100.0
HBFSW	102	83.6	20	16.4	122	100.0
BBFSW	310	93.4	22	6.6	332	100.0
Age (Years)						
<20	31	88.6	4	11.4	35	100.0
20-24	114	86.4	18	13.6	132	100.0
>24	583	88.3	77	11.7	660	100.0
Education						
No education	196	86.3	31	13.7	227	100.0
Primary	351	88.2	47	11.8	398	100.0
Secondary and above	181	89.6	21	10.4	202	100.0
Total	728	88.0	99	12.0	827	100.0

Table 3.36 displays the HIV testing status by category of FSW. Overall, 83.2% reported that they had ever been tested for HIV. The proportion was highest among BBFSWs (90.1%) and lowest among SBFSWs (76.1%). Overall, 84.3% were tested for HIV during the last 12 months before data collection, which was again highest among BBFSWs (100%) and lowest among RBFSWs (60.4%). The most common place for HIV testing was the DICs (94.5%), and the majority (82.7%) reported that they had received the HIV test results.

Table 3.36: HIV Testing Status by Category of FSW

HIV testing	RBFSW		SBFSW		HBFSW		BBFSW		All FSW	
	n	%	n	%	n	%	n	%	n	%
Ever tested for HIV	91	83.5	201	76.1	97	79.5	299	90.1	688	83.2
Total	109		264		122		332		827	
Tested for HIV										
Within 12 months	55	60.4	147	73.1	79	81.4	299	100.0	580	84.3
Between 1-2 years	35	38.5	51	25.4	17	17.5	0	0.0	103	15.0
More than 2 years	1	1.1	3	1.5	1	1.0	0	0.0	5	0.7
Place of testing										
DIC/Outlet	90	98.9	174	86.6	87	89.7	299	100.0	650	94.5
Government Hospital	0	0.0	27	13.5	10	10.4	0	0.0	37	5.4
Private Laboratory	1	1.1	0	0.0	0	0.0	0	0.0	1	0.1
Received test result	76	83.5	153	75.8	76	78.7	267	89.5	569	82.7
Total	91		201		97		299		688	

3.2.2 MSM and MSW

3.2.2.1 Background characteristics of MSM and MSWs

In total, data were collected from 381 MSM (Men who have Sex with Men) and 484 MSWs (Male Sex Workers). Table 3.37 shows the background characteristics of MSM and MSWs.

Overall, the mean age of MSM/MSWs was 26.0 years. The majority (54.5%) were more than 24 years old, while a negligible proportion (7.3%) were less than 20. MSWs were relatively younger (43.8%) than MSM (31.2%). Almost 75% of MSM/MSWs had education up to or more than secondary levels; about one in five were currently married; and half (52.1%) of them were living with their partners. Two-thirds of MSM/MSWs had regular female sex partners.

Table 3.37: Distribution of background characteristics of MSM and MSWs

Characteristics	MSM		MSW		Over all	
	n	%	n	%	n	%
Age (Years)						
<20	31	8.1	32	6.6	63	7.3
20-24	119	31.2	212	43.8	331	38.3
>24	231	60.6	240	49.6	471	54.5
Mean (SD):	26.8 (6.2)		25.3 (5.5)		26.0 (5.9)	
Education						
No education	28	7.3	46	9.5	74	8.6
Primary	51	13.4	92	19.0	143	16.5
Secondary and above	302	79.3	346	71.5	648	74.9
Marital status						
Unmarried	265	69.6	420	86.8	685	79.2
Currently married	112	29.4	56	11.6	168	19.4
Divorced/separated/widowed	4	1.0	8	1.7	12	1.4
Living with wife/ partner						
Yes	228	59.8	223	46.1	451	52.1
No	153	40.2	261	53.9	414	47.9
Did not answer	0	0.0	0	0.0	0	0.0
Type of regular sex partner (Multiple response)						
Male	145	38.1	197	40.7	342	39.5
Female	268	70.3	306	63.2	574	66.4
Hijra	10	2.6	0	0.0	10	1.2
No answer	2	0.5	2	0.4	4	0.5
Total	381		484		865	

3.2.2.2 Sexual and risk behaviors of MSM

Overall, one-third (33.3%) of MSMs had their first anal sex with a commercial sex partner before the age of 15, and the proportion was highest (42.9%) among the uneducated group (Table 3.38). Data also show that the higher the level of education, the lower the exposure to sex at an early age.

Table 3.38: Distribution of age at first anal sex of MSM with commercial sex partners

Characteristics	Age at first sex							
	<= 15		16-17		18 & above		Overall	
	n	%	n	%	n	%	n	%
Age (Years)								
<20	19	59.4	11	34.4	2	6.3	32	100.0
20-24	50	42.0	34	28.6	35	29.4	119	100.0
> 24	58	25.2	54	23.5	118	51.3	230	100.0

Characteristics	Age at first sex							
	<= 15		16-17		18 & above		Overall	
	n	%	n	%	n	%	n	%
Education								
No education	12	42.9	7	25.0	9	32.1	28	100.0
Primary	21	41.2	15	29.4	15	29.4	51	100.0
Secondary	94	31.1	77	25.5	131	43.4	302	100.0
Total	127	33.3	99	26.0	155	40.7	381	100.0

Table 3.39 shows the practice of anal sex of MSM with a male partner during the last six months before data collection. The table shows that two-thirds of MSMs had anal sex during the last six months, and 32% did it in exchange for money with a male partner. About 70% reported that they used condoms in their last anal sex with a male commercial sex partner.

Table 3.39: Distribution of anal sex during the last 6 months before data collection with male partners

Indicators	Number	Percentage
Had anal sex during last six months		
Yes	253	66.4
Had anal sex with money with a male partner		
Yes	122	32.0
Used condom during last anal sex with a male commercial partner (n=122)		
Yes	85	69.7
Total	381	100.0

Table 3.40 shows the MSM's practice of anal sex with male partners in exchange for money in the last month before data collection. More than a quarter (28.1%) reported that they had anal sex in the last month with male commercial partners in exchange for money. The average number of male commercial partners of MSM in the last month was 4.6, while the average number of anal sex acts they had in the last month with commercial partners was 7.9. More than half (54.2%) reported that they used condoms in their last commercial sex.

Table 3.40: Anal sex in last month before data collection with male partners with money

Indicators	Number	%
Had anal sex during last month (n=381)		
Yes	107	28.1
No. of male commercial male partners last one month (n=107)		
Up to 3	45	42.1
4 to 5	35	32.7
>5	27	25.2
Mean (SD)	4.6 (3.0)	
No. of times had anal sex last month with male commercial partners (n=107)		
Up to 3	27	25.2
4 to 5	27	25.2
>5	53	49.5
Mean (SD)	7.9 (7.3)	
Used condom during last anal sex (n=107)		
Yes	58	54.2

Table 3.41 describes sexual practices of MSM with hijra partners with money in the last month before data collection. Only a few (7.6%) MSM had anal sex with hijra last month. The average number of anal sex acts that MSM had with hijra was 2.9 and 75.9% reported that they used condoms in the last sex.

Table 3.41: Anal sex with Hijra in exchange for money last month (n=381)

Indicators	Number	% of MSM
Had sex with Hijra last month (n=381)		
Yes	29	7.6
No. of Hijra sex partners (n=29)		
Up to 3	25	86.2
4 to 5	2	6.9
>5	2	6.9
Mean (SD)	2.2 (1.9)	
No. of anal sex with Hijra last month (n=29)		
Up to 3	24	82.8
4 to 5	2	6.9
>5	3	10.3
Mean (SD)	2.9 (3.5)	
Used condom during last sex (n=29)		
Yes	22	75.9

More than half (57.7%) of MSM reported that they had anal sex with a casual male/hijra partner in the last six months before data collection, and about two-thirds (63.2%) used condoms in the last anal sex (Table 3.42). On the other hand, about half (52.0%) of MSM had anal sex with a casual hijra partner in the last month before data collection. The average number of sex they had in the last month was 12.9, and 61.6% said that they used condoms in their last sex with casual hijra partners (Table 3.43).

Table 3.42: Anal sex with casual Male/Hijra Partners in the last month before data collection

Indicators	Number	% of MSM
Had had sex with male/ Hijra in last month (n=381)		
Yes	198	52.0
No. of male/Hijra sex partners (n=198)		
Up to 3	75	37.9
4 to 5	44	22.2
> 5	79	39.9
Mean (SD)	6.5 (5.6)	
No. of anal sex with male/Hijra last month (n=198)		
Up to 3	47	23.7
4 to 5	41	20.7
> 5	110	55.6
Mean (SD)	12.9 (14.0)	
Used condom during last sex:(n=198)		
Yes	122	61.6

Table 3.43: Anal sex with casual male/hijra partners within 6 months before data collection

Indicators	Number	% of MSM
Had sex with casual male/hijra sex partner in the previous 6 months (n=381)		
Yes	220	57.7
Used condom during last sex (n=220)		
Yes	139	63.2

Table 3.44 shows the MSM's practice of sex with casual female sex partners in the last month before data collection. Only a few (3.9%) said that they had sex with casual female sex partners, and 73.3% of those used condoms in their last sex with casual female sex partners.

Table 3.44: Sex with casual female sex partners in the last month before data collection

Indicators	Number	% of MSM
Had anal sex with casual female sex worker last month (n=381)		
Yes	15	3.9
No. of female casual sex partners:		
Up to 3	14	93.3
4 to 5	1	6.7
>5	0	0
Mean (SD)	1.33 (1.17)	
No. of anal sex with female casual sex partners last month (n=15)		
Up to 3	11	73.3
4 to 5	2	13.3
>5	2	13.3
Mean (SD)	2.71 (3.31)	
Used condom during last sex:(n=15)		
Yes	11	73.3

3.2.2.3 Sexual and risk behaviors of MSWs

Table 3.45 shows the distribution of MSWs who sold sex to males in the last week before data collection. About three-fourths (70.9%) of MSWs sold sex in the last week before data collection. The average number of sex acts sold last week was 7.6, while the average number of anal sex acts they had last week was 10.3. About two-thirds (65.1%) reported that they used condoms in their last sex last week.

Table 3.45: Distribution of MSWs who sold sex to males in the last week before data collection

Indicators	Number	% of MSW
Sold sex to male last week (n=484)		
Yes	343	70.9
No. of time sold sex (n=343)		
Up to 3	101	29.5
4 to 5	75	21.9
>5	167	48.6
Mean (SD)	7.6 (6.6)	
No. of anal sex last week (n=343)		
Up to 3	91	26.4
4 to 5	48	14.2
>5	204	59.4
Mean (SD)	10.3 (9.2)	
Used condom in last anal sex last week (n=343)		
Yes	223	65.1
Used condom during last sex last year (n=484)		
Yes	357	73.7

Tables 3.46 and 3.47 show the sexual behavior of MSWs with casual male and female partners in the last month before data collection. The majority (77.0%) of MSWs had sex with a casual male partner last month. The average number of anal sex MSWs had with casual male partners was 11.2, and 63.4% reported that they used condoms in the last sex.

On the other hand, only a few (4.5%) MSWs reported that they had sex with casual female sex partners last month. The average number of anal or vaginal sex they had with casual female sex partners was 6.5, and less than half (42.9%) used condoms in the last sex (Table 3.47).

Table 3.46: Sex with casual male partners in the last month before data collection

Indicators	Number	% of MSW
Had sex with a casual male partner: (n=484)		
Yes	224	77.0
Number of casual male partners last month (n=224)		
Up to 3	81	36.2
4 to 5	80	35.7
>5	63	28.1
Mean (SD)	7.0 (8.8)	
Number of anal sex acts with casual male partners last month (n=224)		
Up to 3	53	23.5
4 to 5	70	31.0
>5	103	45.6
Mean (SD)	11.2 (14.4)	

Table 3.47: Sex with casual/non-commercial female sex partners last month

Indicators	Number	% of MSW
Had sex with casual female sex partner last month: (n=484)		
Yes	18	3.7
Number of female sex partners last month: (n=484)		
Up to 3	22	100
4 to 5	0	0
>5	0	0
Mean (SD)	0.86 (0.46)	
Number of anal or vaginal sex last month: (n=22)		
Up to 3	11	50
4 to 5	3	13.6
>5	8	36.4
Mean (SD)	6.5 (10.3)	
Used condom in last sex: (n=22)		
Yes	9	42.9

3.2.2.4 STI symptoms and health-seeking behaviors of MSM/MSWs

Table 3.48 depicts the distribution of self-reported STI symptoms and health-seeking behavior of MSM/MSWs. Overall, 21.5% of MSM/MSWs (MSM: 17.3% and MSW: 24.8%) reported that they had STI symptoms within one year before data collection. The commonest STI symptom, as reported by respondents, was genital ulcer (56.5%). About three-fourths (71 %) reported that they received treatment for STI symptoms, and the most frequent place to receive treatment was DIC/Outlet (47.7%).

Table 3.48: Prevalence of self-reported STI symptoms within one year before data collection and health seeking behaviors of MSM/MSWs

Indicators	MSM		MSW		Total	
	n	%	n	%	n	%
Had STI symptoms (self-reported) in last one year	n=381		n=484		n=865	
Yes	66	17.3	120	24.8	186	21.5
Type of STI symptom	n=66		n=120		n=186	
Urethral discharge	14	21.2	7	5.8	21	11.3
Anal discharge	6	9.1	54	45.0	60	32.3
Genital ulcer	46	69.7	59	49.2	105	56.5
Received treatment	n=66		n=120		n=186	
Yes	42	63.6	90	75.0	132	71.0
Place of treatment	n=42		n=90		n=132	
Hospital	7	16.67	10	11.11	17	12.88
DIC/Outlet	20	47.62	43	47.78	63	47.73
Drug Dealer/ Pharmacy	2	4.76	4	4.44	6	4.55
private doctor	1	2.38	2	2.22	3	2.27
Private Clinic	3	7.14	14	15.56	17	12.88
NGO Clinic	1	2.38	0	0.00	1	0.76
Village Doctor/ Healer	4	9.52	7	7.78	11	8.33
Advice/treatment from a friend	3	7.14	9	10.00	12	9.09
No where	0	0.00	1	1.11	1	0.76
Others	1	2.38	0	0.00	1	0.76

3.2.2.4 Awareness of HIV Testing Centers and HIV Testing Status

Table 3.49 shows the awareness of MSM and MSWs about HIV testing centers and their testing status for HIV. The overwhelming majority (81.4%) of MSM/MSWs were aware of HIV testing centers. Overall, 67.5% reported that they had ever been tested for HIV. The proportion was higher among MSWs (74.4%) than MSM (58.8%). Overall, 65.1% were tested for HIV within the last 12 months before data collection, and the distribution was similar among MSM and MSWs. The most common place for HIV testing was the DICs (91.6%), and almost everyone (99.3%) received the HIV test results.

Table 3.49: Awareness of MSM/MSWs about HIV testing centers and HIV testing status

Indicators	MSM		MSW		Total	
	n	%	n	%	n	%
Aware of places for HIV testing						
Yes	297	78.0	407	84.1	704	81.4
Ever tested for HIV						
Yes	224	58.8	360	74.4	584	67.5
Total	381		484		865	
Last time tested for HIV						
Within 12 months	139	62.05	241	66.94	380	65.07
Between 13-24 months	79	35.27	117	32.5	196	33.56
More than 2 years back	6	2.68	2	0.56	8	1.37
Place of last HIV testing						
DIC	196	87.50	339	94.17	535	91.61
HTC centre	1	0.45	0	0.00	1	0.17
Govt. hospital	24	10.71	21	5.83	45	7.71
Private laboratory	3	1.34	0	0.00	3	0.51
Others	0	0.00	0	0.00	0	0.00

Indicators	MSM		MSW		Total	
	n	%	n	%	n	%
Received HIV test result						
Yes	222	99.1	358	99.4	580	99.3
Total	224		360		584	
Received condoms from HIV prevention program						
Yes	304	79.8	439	90.7	743	85.9
Total	381		484		865	

3.2.3 People Who Inject Drugs (PWID)

3.2.3.1 Background Characteristics male PWID

In total, data were collected from 277 PWIDs of which 271 were male. Data from Female PWIDs were not analyzed since the number was very small (n=6). Table 3.50 shows the background characteristics of PWIDs. The mean age of PWID was 38.8 years, and the overwhelming majority (96.7%) were more than 24 years old. About a quarter (22.5%) did not have any education, while 39.1% had secondary or higher education. About three-fourths (72.3%) were currently married, and 63.5% were living with their spouses or regular sex partners.

Table 3.50: Background characteristics of PWIDs

Characteristics	Number	%
Age (Years)		
20-24	9	3.3
>24	262	96.7
Mean (SD)	38.8 (8.5)	
Education		
No education	61	22.5
Primary	104	38.4
Secondary and above	106	39.1
Marital status		
Unmarried	50	18.5
Currently married	196	72.3
Divorced/separated/widowed	25	9.2
Living with spouse or regular sex partner		
Yes	172	63.5
Total	271	

3.2.3.2 Risk behaviors of PWIDs

Table 3.51 shows the distribution of injecting drug use by PWIDs by their background characteristics. The mean age at first use of an injectable drug was 33.3 years. About half (45.4%) of PWIDs started injecting drugs when they were more than 24 years old. The mean duration of using injecting drugs was 12.3 years, and about half (50.9%) were using injecting drugs for more than 10 years. The majority used the drugs either once (52.0%) or 2-3 times a day (45.4%). About half (48.0%) of PWIDs used injecting drugs once yesterday.

Table 3.51: Injecting drug use by background characteristics of PWID (n=271)

Characteristics	Number	%
Age at first use of injecting drug:		
<20 years	25	9.2

Characteristics	Number	%
20-24	94	34.7
>24 years	123	45.4
Don't remember	29	10.7
Mean (SD)	33.3 (22.8)	
Duration of using injecting drugs:		
<5 years	57	21.0
5-10 years	76	28.0
>10 years	138	50.9
Mean (SD)	12.3 (10.4)	
No. of times used injecting drugs last month		
1 time a day	141	52.0
2-3 times a day	123	45.4
4 times a day or more	3	1.1
1 time a week	3	1.1
Don't know	1	0.4
No. of times used injecting drugs yesterday		
None	8	3.0
Once	130	48.0
2-3 times	119	43.9
More than 3 times	14	5.2
Mean (SD)	1.6 (0.9)	

Table 3.52 shows the behavior of PWIDs about injecting drugs and sharing needles and syringes with others. Almost two third (65.3%) received injecting drugs more than 3 times in the last week before data collection. Only 88.2% reported that they did not share needles with others last week, though 85.6% said that they sterilized needles in the last 2 months before data collection.

Table 3.52: PWIDs behavior about injecting drugs and sharing Needles/Syringes

Characteristics	Number	%
Number of times used injecting drugs last week: (n=271)		
None	86	31.0
Once	3	1.1
2-3 times	5	1.8
4 or more times	177	65.3
Mean (SD) Median (IQR)	7.48 (6.81), Median=7.0 IQR=14.0	
Number of times shared needles last week: (n=271)		
Did not share	239	88.2
<=3 times	16	5.9
4 to 5 times	11	4.1
More than 5 times	5	1.8
Sterilized syringe/needle in last 2 months: (n=271)		
Yes	232	85.6
No	33	12.2
Don't know	6	2.2
Number of people shared syringe with respondents in last 2 months: (n=271)		
Did not shared	195	92.0
1-6 persons	22	8.1
Don't remember	54	19.9
Total	271	100.0

Table 3.53 describes the sexual behavior of PWID in the previous month before data collection. The majority (77.1%) of PWID said that they had sex with any partner in the last month, and only 39.5% used condoms in their last sex.

Table 3.53: Sexual behavior of PWIDs with any partner last month

Indicators	Number	%
Had sex in last 1 month (N=271)		
Yes	209	77.1
No. of sex partners: last week (n=209)		
≤3	183	87.6
4 to 5	2	1.0
More than 5	0	0.0
Don't know	24	11.5
Used condoms during last sex in last one month		
Yes	107	39.5

About two-thirds (65.3%) of PWIDs said that they had sex with regular partners in the previous month before data collection (Table 3.54), and only 39.0% used condoms in the last sex. The PWIDs reported that only a small proportion (8.5%) of their regular partners were also injecting drugs.

Table 3.54: Sex with regular partners in the previous month before data collection

Indicators	Number	%
Had sex with regular partners in last 1 month (N=271)		
Yes	177	65.3
No. of times had sex last week: (n=177)		
Up to 3 times	126	71.2
4-5 times	17	9.6
More than 5 times	12	6.8
Don't remember	22	12.4
Used condoms in last sex with regular partner in last 1 month (n=177)		
Yes	69	39.0
Regular partner injects drug (n=177)		
Yes	15	8.5
No	153	86.4
Don't know	9	5.1

Table 3.55 shows the sexual behavior of PWIDs with commercial sex partners. About half (45.4%) of PWIDs had sex with commercial sex partners in the previous month before data collection. A large proportion (73.1%) of PWIDs had sex with commercial sex workers for ≤3 times in the last month and about three-fourths (72.4%) reported using condoms in the last sex.

Table 3.55: Sex with commercial sex partners within one month before data collection

Indicators	Number	%
Had sex with commercial sex workers in the last month (N=271)		
Yes	123	45.4
Frequency of sex with commercial sex partners in the last month (n=123)		
3 times & less	90	73.1%
4-5 times	8	6.5
5 times & more	1	0.8
Don't remembered	26	21.1
Used condoms during last sex with commercial sex partner in the last month: (n=123)		
Yes	89	72.4

Table 3.56 shows the sexual behavior of PWIDs with male or hijra partners. Only a few (11.1%) PWIDs ever had male or hijra partners. A small proportion (7.4%) of PWIDs reported having sex with male or hijra partners within 6 months before data collection, and about half (46.7%) of them used condoms in the last sex.

Table 3.56: Sex with male or Hijra partners in the previous 6 months of data collection

Indicators	Number	%
Ever had male/Hijra partner (N=271)		
Yes	30	11.1
Had sex with male/Hijra partner in last 6 months (among them)		66.7
Yes	20	7.4
Used condom during last sex with male/Hijra (n=30)	14	46.7

3.2.3.3 STI Symptoms and Treatment Seeking Behavior

About a quarter (21.8%) of PWID reported that they had STI symptoms anytime during the last 12 months before data collection (Table 3.57). The most common STI symptom they had was urethral discharge (67.8%), and the majority (71.2%) received treatment from health facilities. Frequently used health facilities for the treatment of STIs were DIC/Outlet (31.0%), pharmacies (21.4%), hospitals (19.0%), and private doctors (11.9%).

Table 3.57: STI symptoms in last 12 months and treatment seeking behavior

Indicators	Number	%
Had (self-reported) STI symptoms (N=271)		
Yes	59	21.8
Type of STI symptoms (multiple response) n=59		
Urethral discharge	40	67.8
Anal or vaginal discharge	9	15.3
Genital ulcer/sore	24	40.7
Sought treatment for STI (n=59)		
Yes	42	71.2
Place of STI treatment last time (n=42)		
Hospital	8	19.0
DIC/Outlet	13	31.0
Drug Dealer/ Pharmacy	9	21.4
Private doctor	5	11.9
Private Clinic	2	4.8
Village Doctor/ Healer	4	9.5
Advice/treatment from a friend	1	2.4

3.2.3.4 Awareness about HIV testing centers and HIV testing status

Tables 3.58 show the awareness of PWIDs about HIV testing centers and their testing status for HIV. The majority (69.0%) of PWIDs were aware of HIV testing centers. The awareness level was higher (71.3%) among the older age group (more than 24 years) compared with the younger PWIDs. The distribution of awareness was more or less homogeneous across the education groups (Table 3.58).

The overwhelming majority (92.7%) of PWIDs reported that they had ever been tested for HIV, and 78.2% were tested for HIV during the last 12 months before data collection. The main places for receiving the HIV test were DIC/Outlet (67.0%) and government hospitals/private labs (26.3%), and almost everyone (93.3%) received the HIV test results. Almost all (93.3%) PWIDs reported that they

received sterile syringes/needles from the HIV prevention program within the last 12 months before data collection (Table 3.59).

Table 3.58: Awareness of PWIDs in HIV testing centers

Characteristics	Aware		Didn't aware		Total	
	n	%	n	%	n	%
Had information about HIV testing centers						
Yes	187	69.0	84	31.0	271	100
Age (Years)						
<20	0	0	0	0	0	0
20-24	2	22.2	7	77.8	9	100
>24	185	70.6	77	29.4	262	100
Education						
No education	38	59.4	23	35.9	64	100
Primary	80	74.8	24	22.4	107	100
Secondary	69	65.1	37	34.9	106	100
Total	187		84		271	

Table 3.59: HIV testing status of PWIDs

Indicators	Number	%
Ever tested for HIV (n=193)		
Yes	179	92.7
Last time tested for HIV(n=179)		
Within 12 months	140	78.2
Between 13-24 months	35	19.6
More than 2 years back	4	2.2
Place of testing (n=179)		
DC/Outlet	120	67.0
Government Hospital /Private Laboratory	47	26.3
Other	12	6.7
Received HIV test results: (n=179)		
Yes	174	97.2
Received syringe/needle from HIV prevention program within last 1 year (n=193)		
Yes	180	93.3



QUALITATIVE FINDINGS ON HIV RISK BEHAVIORS AND VIOLENCE AMONG KEY POPULATIONS

3.3 Qualitative Findings on HIV Risk Behaviors and Violence Among Key Populations

A total of 55 interviews were conducted, consisting of 38 in-depth interviews (IDIs) with respondents from five key populations and 17 key informant interviews (KIIs) with peer leaders and DIC (Drop-in Center) managers. The respondents' profiles have been presented in Table 3.60, categorized by the types of interviews they were part of. The following segment will discuss the findings from the different population groups according to the themes developed during the analysis.

Table 3.60: Distribution of the number of interviews according to the groups of population

SI	Group of populations		Number of respondents
In-depth interviews (IDIs)			
1	Female Sex Worker (FSW)		07
2	Men who have Sex with Men (MSM)		06
3	Male Sex Worker (MSW)		06
4	Persons Who Inject Drugs (PWID)	Male	06
		Female	06
5	Hijra		07
Total			38
Key Informant Interviews (KIIs)			
1	Peer leader	FSW peer leader	03
		PWID peer leader (Male)	01
		MSM peer leader	02
		Hijra peer leader	03
2	DIC Manager	Male	05
		Female	03
Total			17

3.3.1 In-depth interview (IDI) findings

3.3.1.1 Female Sex Workers (FSW)

Entrance to the sex trade

When it came to the first sexual encounters among most of the female respondents, it was evident that the age at which they first had sex was generally lower, and it typically took place during their adolescence. Four respondents, all under 18, reported having their first sexual experience after getting married, which suggests that early marriage is a common social norm. It's important to note that women were more susceptible to violence, including sexual abuse, due to unequal gender norms, power dynamics, and social values.

The FSWs frequently reported deception; three out of seven FSWs claimed they were unaware that men from their village offered employment in Dhaka, including sex work. One incident happened to a garment worker when she was walking on the street; she was captured by the police, who pushed her to jail and forced her to stay with the sex workers. During her stay in jail, she discovered that sex work is an easy way to earn money, which motivated her entry into this trade.

Some reported being raped by strangers; beaten by boyfriends, and some were beaten regularly by their husbands. Ultimately, these abusive behaviors pressured them to flee their home, where there was no

other option than sex work to meet their basic needs. Many women reported violence first, which pressed them to engage in the sex trade.

One of the respondents mentioned how she was abused then how that led to sex work.

"At a very young age, I was raped by a man, and that pushed me into the sex trade."

Another FSW shared her experience, stating that,

"On the 7th floor, 15–16 men raped me; my vaginal passage was severely torn. Since then, I have gotten myself involved as an FSW."

Knowledge of HIV & AIDS

Except for an FSW, all the FSWs stated that they participated in the health education programs made available to them by DICs and that they learned a lot about HIV/AIDS and other issues, including the ways of transmission of HIV/AIDS and other STIs, the methods of safe sexual practices, the importance of condom usage and the consistent and correct method of using it, the consequences of drug misuse, and needle sharing. Most participants mentioned unsafe sexual practices without condoms as the predominant cause of the transmission of HIV/AIDS. One FSW stated:

"If I don't use a condom and have sex with someone, the HIV will pass to him and then from him to his wife."

One FSW had misconceptions about HIV/AIDS. She believed that sharing a meal with an HIV-infected person or even just being in the infected person's presence and touching him or her could lead to transmission of the virus.

Condom use

Changes in condom-use practice

None of the FSWs used condoms before the health education training session because they were not aware of the advantages of doing so when engaging in sexual activity.

In the words of one of the FSWs,

"I did not use condoms in the past because I knew nothing about these."

Following exposure to the DICs' health education program, four of seven FSWs claimed they regularly used condoms with their clients and partners.

Barriers to consistent use of condoms

The street-based FSWs had varying reports on their condom use. All of them attempted to use a condom for every sexual act, but they encountered various challenges that hindered them from using condoms consistently. These obstacles included their disadvantaged socioeconomic status, gender, power imbalances, and societal stigma. Additionally, factors such as client satisfaction, influence from pimps, and the varying levels of condom usage with steady partners all indirectly hindered their ability to use condoms consistently. It's worth noting that this issue extends beyond just FSWs and affects all key populations. Condom usage with steady partners also varied significantly among all the key populations, including FSWs.

Many FSWs demonstrated their self-esteem and confidence in dealing with partners who refused condom use. They wanted to protect themselves first and asserted that they refused partners who tempted them by offering extra money for not using condoms. Few FSWs reported that they pressured their partners, even if they wanted to have anal sex, to use a condom every time. A few FSWs also reported that they tried to pressure their partners to use condoms even if they wanted to do oral sex. However, in real-life settings, the succeeding proportion was not high.

The street-based FSWs were included for the qualitative component of this study. Though the economic status varied substantially among the FSWs of different groups, depending on their client flow and the place of work, generally the street-based FSWs belong to the low socio-economic status. Eventually, the low socio-economic status prevents the street-based FSWs from negotiating with their clients for consistent condom use. Even age and being less attractive are observed to be factors for women who worked on the streets; the FSWs in the street are often seen as low-class sex workers who mostly engaged in sex work for survival. Their average daily income is about three to five hundred takas, which is extremely inadequate to serve their basic needs, such as food, clothes, and housing. It is worth mentioning that this is not an everyday scenario; they have to pass clientless nights in many instances. Economic hardships are more noticeable if they have children. The results of the IDIs revealed that many street-based FSWs are doing an additional job, such as street vending or bricklaying, during the daytime simultaneously with their sex trade during the night. With this economic status, most FSWs did not have the power or ability to convince anyone, be it clients, pimps, or even steady partners, to use condoms consistently during every sexual encounter. Many of the FSWs expressed their feelings:

“We are poor; if the client goes to another woman, I would be in starvation, and so, in that case, I have to comply with the client’s request.”

FSWs were also prohibited from using condoms if they were under a “Sardarni” (Elderly female owner):

“When I was under a ‘Sardarni’ and refused to use a condom, the client said I need to change the FSW, the ‘Sardarni’ then said I cannot lose the client, that pressure me to do sex without a condom.”

The condom use practice among FSWs significantly differed between steady partners and the client’s wives. Five FSWs reported that when they could use a condom, they used it consistently over their sexual life with partners other than with steady partners.

One FSW stated the following:

“My babu (Steady client) does sex only with me and his wife because I am having sex only with my babu, and another sexual partner is his wife. So, there is no scope for HIV transmission”.

The other reasons for not using condoms with a steady partner were:

“Their appearance is healthy”; “My babu refused to use condoms in many instances, then I stopped talking about condoms”; “I am hesitant to ask my babu about condoms”; “did not always have a condom at hand”.

A few FSWs mentioned that they could not approach their partners for using a condom. The reason, as stated, was that the client would be worried and might think that the FSW has an STI. That would again put the FSW in economic hardship by losing her clients.

Five out of seven FSWs had consistently used condoms during their episodes of sexual intercourse over their entire sex life. However, when having sex with steady partners, some of the FSWs had discussed

condom use with their steady partners, and two succeeded in using condoms many times. Among those who had both steady and unsteady clients, they could discuss condom use with steady partners, and they also agreed to use condoms. This opposite scenario was because their steady partners were also concerned about getting infected as they allowed the FSWs to partners other than them, as some of the steady partners could not afford the FSWs' living costs.

Few FSWs refused to have sex with a client if their sex partner was unwilling to use a condom, and some respondents reported that when their partners refused to use a condom, in some cases, they could persuade the partners to use a condom. However, the respondents who fall into the low-income group tended to report lower levels of consistent condom use. FSWs reported different ways of negotiating condom use with clients:

"Educating the partners about HIV and how condoms can protect them," "Describing that I can be infected with HIV as I have many other partners and I can infect you,"

Healthcare seeking behavior

People who belong to key populations seek healthcare for various health concerns. These concerns are broadly grouped into two categories: general health issues and sexual and reproductive health issues, which include STIs and HIV/AIDS. They also categorize healthcare facilities into two groups: DICs and other healthcare institutions, such as government hospitals, private clinics, and others. DICs offer various healthcare services, including condoms and lubricants, HIV/AIDS education and counseling, blood testing, and referral services for key populations.

Most FSWs were satisfied with the services provided by DICs. They appreciated the healthcare provider's approach and were pleased with the counseling, condom supply, and blood test facilities. However, the situation was different with other health facilities. FSWs did not feel safe seeking services from other healthcare settings due to privacy breach violations and providers' judgmental attitudes towards them because of their profession. Some FSWs reported visiting government health facilities for general issues, but they did not disclose their professions or sexual history for fear of being denied the services they needed. FSWs seeking treatment for conditions related to sexual contact or requiring a sexual history often chose to visit DICs.

One FSW mentioned:

"I go to the hospital if I have a fever, a cough, or the flu. I do not, however, identify myself as a sex worker. For problems like itching, vaginal discharge, or syphilis, I come to the DICs."

Violence

FSWs frequently experience many types of violence, including physical, sexual, verbal, and financial abuse. Societal gender norms and socioeconomic disparities most likely played a major part in this. The street-based FSWs pointed out that they often could not protect themselves because their activities were considered illegal; another reason was that they often faced violence from men. Maltreatment during sexual intercourse, such as demand for multiple sexual acts within one night, and exploitation in terms of pay was a common phenomenon. Sexual dissatisfaction resulted in being beaten by men or denied payment.

"In many instances, the abusive partners are drunk. These men want multiple sexual acts that make physical pain to me, like vaginal swelling."

One FSW, while describing her experience with drug abuse, stated this:

“When I say I cannot do anymore, then men give me something to eat, then I become eager to do sex as like the men”

The most frequent violence against FSWs was assaulting them, forcing them to have sex with others, and not paying the promised money, as per the statement of another FSW:

“After having sex, he did not pay me, he investigated whether I have any disease or not, and he said that he would beat me if he found out that I infected him.”

FSWs were also facing verbal abuse from their partners if they were dissatisfied with the sexual act.

“Some partners were very rude. They called me a bitch, and roughly touched my body. If I resisted, in many instances, they denied paying.”

On the streets, some men acted as pimps responsible for arranging clients for the FSWs and protecting them from physical abuse and violence. However, this practice was limited to certain areas. Street-based sex workers could only work easily in certain areas regulated by pimps. In return, FSWs had to pay a certain proportion of their income to these pimps. These pimps also had sexual relationships with them. Though the pimp’s role was to establish their sex trade and prevent violence against street-based FSWs, they also demonstrated an abusive attitude. A street-based FSW stated:

“Pimps often look down on us and beat those who are disobedient. My relationship with pimps is only good if I give them the money as per their demand. Sometimes, they suspect me to withhold money and beat me to get it.”

All these violent incidents toward those FSWs compromised their role in making decisions about consistent condom use with clients and, as a result, made them vulnerable to HIV and AIDS.

Situation during COVID-19

Of those FSWs who were involved in street-based sex work, many reported ceasing activities at first but later returned to work despite their concerns about contracting COVID-19:

“I stopped sex work in the COVID period. People feared of dying and being infected with COVID during sexual activity.”

The FSWs engaged in sex work also described reduced partners even though the social distancing restrictions were eased, which was linked to customer’s health concerns. The pandemic made the customers scared of the FSWs. Due to the unstable economy, doing sex work during COVID-19 limited their ability to stand up for clients who refused to use condoms. Reduced demand for street-based sex work once social distancing restrictions eased meant that street-based sex workers had to lower prices. This not only placed them at risk of economic exploitation but also compromised their ability to negotiate safe sex practices:

“They would demand more because they knew we needed the money. And no one else is there, so they would demand things you didn’t want to do or try and force you to do it anyway.”

Some of the FSWs described that during the first lockdown, they did not know how to find alternative ways to earn; their ability to generate income through the alternate business was found later in the Pandemic.

3.3.1.2 Men having sex with men (MSM)

Knowledge on HIV & AIDS

All the IDI participants (MSM) were involved in health education training programs. They had learned about HIV/AIDS, other sexually transmitted infections (STIs), the value of condom use in safe sexual practice, and proper methods of using condoms. One of them also mentioned that he had learned about safe practices for injecting drugs. In almost all the participants, the perceived source of HIV infection was a casual sexual encounter at a club, a sex party, or from someone they had met via social media. A few suspected that the source of infection was more from an irregular partner, while a few cases mentioned violence, for example, sexual coercion, as possibly related to HIV infection. Many participants discussed sexual risk-taking behaviors, for example, the frequency of sexual acts without condoms at the beginning of their sex life, which was rationalized in terms of newcomers to this sex life. However, some did not think their sexual activity without a condom would make them prone to HIV infection. Perceived susceptibility and severity varied among the MSM. Perception of severity related to STIs was low, as some men felt these infections could not be the cause of HIV transmission. One MSM, during an informal conversation with the interviewer, stated the following:

“Generally, if you have sexual intercourse with an FSW and you know that she has many other men with whom she is having sex, she can infect you if she has contracted the disease.”

Nearly all the participants acknowledged that not using condoms during sexual activity increased the risk of getting an illness and spreading it to others.

One mentioned:

“It (HIV/AIDS) will undoubtedly occur if I am not cautious. The possibility of getting an infection exists if I cannot use a condom properly or if the people, I go with do not use condoms appropriately.”

One respondent had a misconception that sharing furniture or utensils, including drinking water from the same glass, could spread HIV.

Condom use

All the MSMs reported having their first sexual experience at a young age, between 16 and 20. Among the MSM, the first sexual encounter was typically not an abusive, unintended, or non-consensual incident but rather a pleasant one. Although one of them said the first experience was against his will, eventually he enjoyed it.

One MSM stated:

“I was initially uncomfortable because it was against my will. But then, I liked it.”

Before attending the health education training, five out of six MSMs did not use condoms because they were unaware of the advantages of using them during sexual activity. One of the participants claimed to have learned about condom usage from other sources, such as YouTube and used a condom during his first sexual encounter, but before being exposed to the health education training program, he had not been constantly using condoms:

“I then used a condom. I learned it through YouTube's informative videos. I was not sure if he took injectable medication or not. I might have acquired HIV from him if he had it.”

Following exposure to the health education program, four participants claimed they used condoms consistently with their partners and clients. A few MSMs refused to have sex with a client if their sex partner was unwilling to use a condom, and some participants mentioned that when their partners refused to use a condom, in some cases, they could persuade the partners to use a condom.

One of the MSMs mentioned that he always refused those who insisted on him not to use a condom during sexual activity. Three of them had steady partners, but two of them always used condoms with their partners, while the other did not.

One participant stated the following:

"I have a regular partner. But like me, he is also likely to engage in sexual activity with others secretly. I might not be aware of that."

According to another participant:

"I have to use a condom if I have sex with someone outside. With him (steady partner), there is no need to use a condom."

Social media, including geo-locational sexual networking apps, provided convenient access to sexual partners for some of the participants. Four of them used social media to search for sexual partners.

One participant mentioned:

"The introduction of MSM apps makes the activities easy. I am used to this. These apps make it so much more convenient. The apps have code words for 'come round to ours and do this,' 'chill-outs,' etc."

Some of the participants stated that their MSM appearance was not visible, and they tended to normalize their activities as other people do. The reason against this scenario was the role of social norms and networks and the search for pleasure. This appearance affected their family life; many MSMs stated that they had jumped into a marital relationship due to family pressure.

Health-care seeking behavior

One participant mentioned that he noticed a swelling in his anal region and made the following remark to illustrate his feelings of anxiety and uncertainty about access to healthcare:

"I initially felt afraid. I could not share this anywhere because it is a subject of shame. It was too late to seek treatment since I was uncertain who to tell and worried that I would lose my privacy."

Key factors in the health-seeking behavior among MSM included social stigma that includes 'homosexuality is a crime.' This influenced the perceptions of social barriers among some MSMs seeking health care. Furthermore, how they would be treated by the providers and concerns that the service provider would expose them as MSMs or might inform the police stated as barriers to health-seeking behavior even when MSM understood that they needed health services.

However, MSMs reportedly visited DIC for various reasons, including getting condoms, lubricants, and medications and scheduling routine blood tests. They were all pleased with the services offered to them by DIC.

One participant stated the following:

"I come here to receive counseling, take condoms, get some drugs, and occasionally undergo testing for HIV. They suggest that I visit regularly. I am satisfied with the services."

Violence

None of the IDI participants have experienced violence, but they witnessed others being bullied. One of them mentioned that an MSM experienced emotional abuse because of harassment about his gender attributes. He also spoke about a member of the MSM community who used to abuse others as below:

“There are some boys who are somewhat different from others. They are used to get bullied by others and called "half-ladies." As a result, they get upset.”

Situation during COVID-19

Every respondent acknowledged having difficulties during COVID-19, with financial issues being the most prevalent. Their sexual lives were also affected during that period. One MSM said that he could not get into any sexual relations during lockdown. Later, he somehow managed to get into sexual relations while maintaining some basic hygienic practices.

“I used to bring them home when my house was empty. So, I used a disinfectant spray, hand wash, and bleaching powder spray, and then went for sexual intimacy.”

3.3.1.3 Male Sex Worker (MSW)

Knowledge of HIV & AIDS

All the MSW IDI participants were involved in health education training programs. They had learned about HIV/AIDS, modes of transmission of HIV/AIDS, other sexually transmitted infections (STIs), and the importance of condom usage in sexual practice. All participants mentioned that if they were not cautious about using condoms during sexual contact, they might contract HIV/AIDS. One of them was also aware that oral sex could transmit HIV/AIDS.

“I have many partners. So, if I do not use condoms during sexual activity, I will be infected by HIV/AIDS.”

Condom use

Like the MSMs, the first sexual encounter was often not an unplanned or non-consensual incident but a pleasant experience for most of the MSW participants. However, two of them said the initial sexual encounter was abusive and against their consent.

“I was a ‘Koti’ (term used for MSW) and had feminine attitudes. That is why I was abused. My cousin’s friend abused me sexually.”

Before participating in the health education training session, four out of six respondents did not use condoms because they were unaware of the benefits of doing so during sexual activity. One participant claimed to have used condoms earlier out of fantasy. But that was not consistent. Five out of six IDI participants said they started using condoms regularly after being exposed to the health education program. Still, among them, one did not use condoms consistently with his steady partner. The respondents who did not use condoms even after getting exposed to the health education program said it was due to economic problems or getting more money for not using condoms. Some of the MSWs mentioned having partners who insisted on not using condoms during sexual activity, but they always

refused. Almost all of them had steady partners, but three of them mentioned that they always used condoms with their partners, while the others did not.

One of the MSWs stated the following:

“I use condoms with my 'parik' (steady partner) also. I do not believe anyone.”

But another MSW had a different perspective:

“I do not use condoms with my 'parik' (steady partner) regularly. He has been with me for about 18 to 19 years. How can I not believe him?”

Health-care seeking behavior

Three MSW participants experienced a physical issue in the past six months for which they needed medical attention. However, they all went to DIC for various things like getting condoms, lubricants, medication, scheduling regular blood tests, and getting the care they needed. All of the respondents expressed satisfaction with the DICs' services. One of them pointed out that many MSWs had issues with the DIC weekends on Fridays and Saturdays because they did not have time to attend the DICs on other days.

Typically, MSWs were less likely to attend other medical facilities than DICs. Although one of them had to visit the closest government hospitals for per-anal bleeding, where he initially lied to the doctor that he is having anal sex, he was judged by the doctor. Eventually, he did not feel like visiting any more public hospitals again.

“The doctor told me that what I have done is a sin, a punishable crime.”

Violence

This study revealed several modes or mediums of contact between MSWs, like MSMs, which included different social media platforms and several dating apps. Sexual contact through these platforms was easy, and so was the susceptibility toward various kinds of violence.

Though none of the MSWs included in this study had personally experienced any violence, they had all witnessed it happen to others, including physical, sexual, and, most commonly, financial abuse. According to most of them, due to those violent incidents, they compromised in using condoms and became susceptible to HIV/AIDS.

Situation during COVID-19

Most participants acknowledged having some difficulties during COVID-19, with financial issues being the most prevalent and their sexual lives being affected most during that period.

“COVID was a deadly disease, and we were all frightened. So sexual contact during that time was limited.”

3.3.1.4 People who inject drugs (PWID)

Injecting drug use

Ten out of twelve PWIDs started to misuse the injectable drugs while they were very young, before the age of 25. One respondent started injecting at the age of 28 years, and another after turning 35 years.

Three PWIDs talked about switching from other drugs to injectable drug use. Two of them began the journey by using heroin, but they could not continue owing to its expensive cost and switched to injectable drugs because of the low cost. Before using heroin, another PWID used marijuana and other narcotics.

"I started with cigarettes, then on to ganja, then to tablets, and finally to various drugs. Due to one of my friends' suggestions, I became an injectable drug user. Its effect lasts for the whole day once taken. The cost lowered to 100 takas per day."

Most PWIDs reported that rising costs forced them to reduce the quantity or frequency of injectable drugs. The frequency of injecting drugs among PWIDs ranged from 3 to 5 times per day usually:

"I once had it three to five times a day. I can't afford it now as the price has gone up. Now I take once every day."

IDIs with PWID highlighted that sharing drugs, needles, and syringes was common. The most common factor associated with needle and syringe sharing was the denial of their vulnerability to acquiring HIV infection. Before being exposed to the health education program, five out of twelve PWIDs shared their needles while using injectable drugs. To understand the dynamics of sharing behaviors, the question was, 'Why do they share drugs?' To reduce the cost, they share the drugs among themselves. Several PWID participants described their drug choices towards the drugs at lower costs. However, many of them had changed and no longer share needles.

When using drugs, four female PWIDs claimed they did not share the needle with others since they only did so with their husbands. One female PWID said,

"My husband and I share a needle. We once had a blood test, and the results showed that we are virus-free."

The locations of taking injections were mostly by the gathering, called an "adda." Many of the PWID described how they organized the 'adda'; they treat the 'adda' as safe injection-taking ways,

"In those 'addas,' we are all known to each other so that we can share our needles and syringes because we all are free from STI/HIV. We have our test in the DIC."

As mentioned, the police often destroyed the 'Adda,' which was their most adverse threat, not only for injecting drugs but sometimes they were arrested; as a result, the PWIDs needed to move around and develop new groups.

Interestingly, an atypical finding was that many PWIDs thought the injections were good for their health rather than understanding this as substance abuse that could harm their health. Many of the respondents (eight out of twelve) reported their post-injectable drug feelings as being in a "good mood" or "euphoric mood." One PWID experienced reduced numbness and pain throughout his body, while others claimed it gave them more energy. Several PWIDs also mentioned having a sexual drive after taking injectable drugs.

"Before taking it, I felt in turmoil. After taking it, I felt at peace. That feeling can be compared to heaven and hell."

"I can run the rickshaw effectively after taking the injection. My body's burning sensation diminished."

The reasons for having fewer sexual acts, as understood, was their euphoric mood or could be multiple; euphoric mood prevented them either from the urge for sex or developing impotency for using injections for a long time. Even during the sexual act with FSWs, they forgot to use condoms despite their knowledge. Almost all of them stated the following:

"I become so happy after injecting drugs, then I forget to buy a condom and often have sex without a condom. At that stage, I can't remember about a condom; injecting drugs and having sex is a pleasure."

This study of female PWIDs provided an in-depth understanding of their risky drug use behaviors and unsafe sexual practices and explained why women share injection equipment. Female PWIDs were more at risk of HIV, as mentioned; one female PWID suffered from STIs. She was married to a fraud, who forced her to do commercial sex work. Moreover, she was forced to take injections while having sex with the clients. That first event made her a PWID and simultaneously pushed her to commercial sex work. Many of the PWIDs confessed that despite the knowledge of sharing needles, syringes, or sex without a condom, putting them at risk of contracting HIV, they were practicing all these harmful aspects.

Knowledge of HIV & AIDS

All of the twelve PWIDs interviewed for the study reported that they took part in the health education initiatives. Through these programs, they learned about the negative impact of drug misuse, the dangers of sharing needles, the risks associated with HIV/AIDS, and the significance of using condoms during sexual activity to promote safety. Almost all of the respondents knew about the transmission of HIV/AIDS through sharing needles among injectable drug users. Most of the respondents knew about the risks of unprotected sexual intercourse, and two of them recognized blood transfusion without screening as the mode of transmission of HIV/AIDS. One of them was also aware that breastfeeding could cause HIV/AIDS in a child born to an HIV-positive mother. But one of them had a misconception also. The one with misconception stated the following:

"Using the same utensil with an HIV-infected person while eating can transfer HIV. Additionally, it can spread through the breathing, sneezing, and coughing of HIV-infected people."

Condom Use

The PWIDs' first sexual experience did not differ significantly from other key populations. Most PWIDs engaged in sexual activity early, with male PWIDs typically choosing brothels or initiating their encounters with pleasant experiences. Conversely, female PWIDs of the interviewed PWIDs often experienced their first sexual encounter after marriage or due to sexual violence.

Before attending the health education training session, most PWIDs (10 out of 12) did not use condoms due to their lack of knowledge about the advantages of using them during sexual activities. Even after completing the health education program, only 3 out of 12 PWIDs claimed to use condoms regularly with their partners and customers. According to the IDI conducted with PWIDs, they had the lowest tendency to use condoms consistently among all the key populations. Female PWIDs reported not requiring condoms as they only had sexual relations with their husbands and steady partners.

One male PWID shared his thoughts on not using condoms:

"Sometimes, if you go there (brothel) once in fifteen days, you don't feel like using a condom anymore."

Health-care seeking behavior

Drop-in centers (DICs) are crucial in providing various services to key populations. In addition to offering essential services, DICs ensure the privacy of these populations, making them a safe and comfortable facility to visit frequently. The confidentiality provided by DICs is particularly important for populations not seen as "normal" by the general population, including people who inject drugs (PWIDs).

Except for a few PWIDs, almost all PWIDs expressed their satisfaction with the DICs after using their services. They appreciated the healthcare provider's approach to treating them and were pleased with the services.

According to one male PWID:

"They (DIC service providers) keep my privacy safe enough. They do not tell anyone about me or call me in front of others."

Three out of twelve PWIDs expressed dissatisfaction with the DICs for failing to provide the necessary services.

One mentioned:

"They (DIC service providers) refused to give me the medicine I needed when I went to them. They occasionally behaved rudely as well."

A few PWIDs expressed dissatisfaction with the available medicines provided at the Drop-in Centers and have requested a wider variety of medicines from the DICs.

Violence

We usually think of the key populations getting affected by extreme violence. But the coin has another side as well. During the IDIs, it was noted that the key populations engaged in a lot of violence and unlawful acts. PWIDs were more likely to associate with those activities than others since they needed more money to purchase the drugs, as evident in this study. Many PWIDs acknowledged that they used to do crimes such as thieving, robbery, and purse snatching as a source of earnings to pay for their injectable drugs.

One stated,

"Many (PWIDs) are involved in criminal activities; otherwise, how will they pay?"

Situation during COVID-19

The pandemic brought changes in drug use patterns and behaviors. The PWIDs agreed that lockdown measures had made it more difficult to source injections. Obstacles to conducting drug transactions in public spaces were described. Initially, although some partners responded to these constraints by ceasing or reducing their drug use, some reported sourcing other substances to lighten the withdrawal symptoms.

One PWID stated,

"I started buying heroin or other forms of drugs online to prevent the suffering from the withdrawal symptoms."

Others, though, reported how changes in drug-use patterns affected them in the earlier periods of the pandemic. Although common during the pandemic, other drugs were more widespread because of their

availability. Many respondents reported job losses earlier in the pandemic and subsequent ongoing difficulties re-engaging with formal or casual employment because of the extension of the lockdown period. Income constraints meant the daily economic demands of drug use became burdensome. That was reported as a problem in obtaining cash for drug purchases due to traveling to a secret place. The heightened security during the lockdown made selling injections harder; some isolated places during these earlier periods helped the PWIDs rely upon the fixed timing in buying the injections.

Another PWID mentioned,

“We have to go to drug sellers secretly to buy the injections.”

They were desperate for their self-care to avoid withdrawal symptoms. One PWID stated,

“So, I couldn’t then eat, as the injection is on top of that in my life, it is ridiculous.”

Most PWIDs depended on informal income-generating activities for the maintenance needs of their livelihood, including sex work, begging, selling goods, etc. Some described that in the first lockdown, they didn't know how to find alternatives to earning; their ability to generate income through the alternate business was found later in the pandemic. Even some others reported limited opportunities for begging because:

“People always say they don’t carry cash anymore.”

Some female PWIDs, on the other hand, also described entering into relationships with men for financial support.

“We wear masks during our sexual act to protect against COVID.”

As stated, they wanted to make their own money to buy their drugs. Some of them had decreased income, which meant that they had to rely on others for drugs:

“I started relying on other people for drugs; they gave me drugs or money for drugs.”

This led to an exploitative relationship whereby the male counterpart exercised a controlling power over her, such as forcing sex without a condom or other ways of sex to fulfill their pleasure because they needed drugs. They termed this kind of behavior as 'exploitation' because men started demanding things in return that they had never done before. According to one female PWID:

“Then all the activities got out of my hand. I have never been in that situation before; then I started working for him for drugs.”

3.3.1.5 Hijra

Knowledge of HIV & AIDS

All Hijra participated in health education training programs where they learned about HIV/AIDS and its various modes of transmission. These included unprotected sexual intercourse without condoms and needle sharing among injectable drug users. Additionally, one of the Hijra recognized unscreened blood transfusions and breastfeeding from HIV-positive mothers as other ways of contracting HIV/AIDS.

All participants acknowledged the risk of contracting HIV/AIDS if they engaged in sexual activity without using condoms. They also recognized the potential for transmitting infections and the responsibility to prevent infecting others.

According to one of them:

“I might get HIV if I have intercourse with someone without a condom. I have to use condoms.”

Condom use

Compared to other key populations, the age range for having one's first sexual encounter was wide among Hijra. The range of ages was six years to seventeen years. Their first sexual experiences varied due to the vast age range of individuals. Some of them said it was a wonderful experience, while others said it was an unexpectedly awful one. Pathways to risk at the interface of violence, three out of seven Hijra explained how the forced gang rape or simply rape altered their sexual behavior, which widened their exposure to the contexts for higher risk sexual acts. One of them also described the incident as an unknown event at the time, but that first sexual act placed them as a sex worker later.

“He forced me to have sex while he grabbed my mouth. I was unable to understand what was happening. I moaned and had profuse per-anal bleeding.”

“I used to assume that he caressed me or gave me a childlike gaze. As I grew up, I understood that it was actually sexual activity.”

None of the Hijra used condoms before their exposure to the health education program, as they did not know the importance of condom use or its methods. Five out of seven participants stated that they had started to use condoms with their clients after getting exposed to the health education program. One of them could not use condoms consistently because of client dissatisfaction. Clients used to scold them, get dissatisfied, behave roughly, and abuse them, but the respondents tried to counsel and persuade them to use condoms during sexual activities.

So, there are multiple barriers to overcome for the Hijra, like the FSWs, to persuade their clients to consistent condom use. The economic hardship and social stigma related to gender norms can be the major factors to be blamed, and the result is often abuse physically, sexually, and financially.

One Hijra stated:

“I used to engage in sexual activity on the streets back then. Many young men choose not to use condoms. They desired to pay an additional ten to twenty taka for not using condoms.”

Another factor for not using condoms consistently among Hijra was their steady partners (Parik: in their terms). Condom use practice differed among Hijra population, based on the status of their sexual partners. Most of the Hijra population had steady partners or husbands (Parik: in their terms) with whom they usually did not intend to use condoms.

One Hijra mentioned the following:

“I rarely used condoms with him (steady partner: Park). Because he (steady partner: Parik) was alone and used to come to me, those (other than Parik) who come can go outside and even go to a prostitute. How can I believe the boys?”

Health-care seeking behavior

Like other key populations, all the Hijras described their experiences with DIC as positive. They received all the required medications and other supplies, were pleased with the healthcare providers' conduct, and felt confident and at ease entering DIC because their privacy was respected there. One of the Hijra suggested the DIC should be more spacious.

One participant mentioned the following:

“Their conduct is admirable. Doctors are skilled communicators who speak with respect.”

However, their experiences with the general health facilities were somewhat different. Due to privacy violations and providers' judgmental attitudes toward them based on their sexual orientation and gender nonconformity, the Hijra's did not feel secure getting services from those facilities. Findings from the Hijra's also indicated frequent hostile responses, ranging from humiliating the Hijra patient, refusing appropriate privacy, or asking the Hijra patient to leave the facility. Two Hijra claimed that the public hospitals did not accept them, did not respect their privacy, and even subjected them to harassment because of their identities.

“The private clinics and hospitals do not even permit us to visit there, let alone provide us the treatments.”

Regarding the healthcare-seeking behavior of the Hijra population, the providers often ask unnecessary questions or do physical examinations that seem awkward to Hijra population. The Hijra population mentioned that the providers lack knowledge about them. They are often misinformed about the resemblance between gender identities, which results in inappropriate treatment. Conversely, Hijra population individuals frequently reported a lack of medically trained providers about the biological anatomy of Hijra population other than the providers of the DIC facilities. The necessary treatment they received from the providers of the DIC is due to the training of the providers.

Violence

During the IDIs, it became evident that Hijra population often experience various forms of violence. This could be attributed to societal gender norms and economic disparities, which may explain why Hijra population experience more violent incidents.

The experiences shared by one Hijra:

“I was abused in many ways; for example, one night, one forcibly took me to his home. He was drunk, and after having sex, he denied giving me money. He wanted to push me from the five-storied roof to kill me. I just left the place to save my life.”

Another states the following:

“Sometimes men call the Hijra population at home, have sexual intercourse, and do not give the payment. Rather, take her belongings like mobile, taka.”

Situation during COVID-19

The Hijras were found not to be scared of COVID-19; they had faith in almighty Allah (God). Many did not suffer from COVID-19, even staying in polluted conditions. All participants acknowledged having some difficulty during COVID-19, with financial issues being the most prevalent. Their sexual lives were also affected during that period. Due to the lockdown and clients' fear of getting affected by COVID-19, they had to avoid sexual contact. The markets and shops where they used to collect money were also affected during that period. One of the participants shared about the familial and community support she got during that period, and some others talked about the aid from the government of Bangladesh and NGOs. One of the participants also mentioned the alternate business she initiated for income during COVID.

During the lockdown period, one of them sold betel leaves in a disguised way, such as covering her head and putting on a mask:

"Nobody could recognize me as 'Hijra', even not the Hijras themselves."

3.3.2 Key Informant Interview (KII) findings

Knowledge and conception about HIV/AIDS among key populations

The key informants had different opinions about why some groups were considered key populations. Many believed that because of their various sexual orientations, activities, and social connections, they stood out from other members of society and were therefore deemed members of "key populations." As a result, the key populations became more susceptible to HIV/AIDS and other STIs.

One of the DIC managers mentioned:

"We use this term (key population) to refer to populations at risk for HIV."

According to another DIC manager:

"They (Key population) are not like general populations. They are different."

These key populations received health care from DICs. The DICs assigned field workers or outreach workers to identify the key populations, adding them to the "mother list" and giving them access to the health services the DICs offer. Field workers were chosen from among the key populations to track down or more easily reach these populations. One of the peer leaders responded to the question of how they locate important populations:

"We find them quickly as we are also like them. A thief is said to know other thieves well."

The DICs provide the KPs with various services, including health education programs that take the form of group discussions and one-on-one discussions, as well as the distribution of supplies like condoms, lubricants, BCC materials, etc. One of the DIC managers described the five different kinds of health education programs they used to offer at the field level, through which they instructed the key populations on the basic concepts of HIV/AIDS and its preventive measures, safe sexual practices, the proper use of condoms, HIV testing services, and drug abuse. One peer leader who works with the Hijra population stated:

"We offer them BCC materials and health education sessions. We visit their dera (Residence) for sessions, schedule group discussions with them, and even invite them to our office for education and counseling."

According to the key informants, numerous improvements had been noticed due to the KPs' exposure to the health education programs. The prevalence of condom use, awareness of HIV/AIDS and its transmission methods, and HIV/AIDS prevention strategies have all improved. However, the outcomes of such improvement have not reached their optimal level.

According to one DIC manager:

"Changes have taken place. Consistent condom usage was once quite low; today, it is around 44%. While the condom distribution flow is around 90%, the usage rate is only 44%. We are not yet content."

The key informants highlighted why they were only providing the KPs with health education programs while not focusing enough on the intervention or program for the clients to get them educated or

provided with effective health education programs. Therefore, the clients were not adequately informed and encouraged to practice safe sex. In that case, it is challenging for the KPs to adhere to safe sexual practices because of gender and power relationships and social hierarchy.

One DIC manager mentioned the following:

“During sexual acts, a man always plays the dominant role. His desires are more reflected than a girl's.”

Another issue one of the DIC managers raised was the lack of an appropriate setting where field workers could give the KPs quality health education, particularly at night.

“We have to think about the outreach fields at night. We only set goals for our field workers to provide the desired number of sessions. But are the sessions always effective? Is it genuinely possible to create a setting at night that will aid those who are targeted in understanding those messages?”

Condom use practice among key population

The KII stated that many Hijras were engaged with 3-5 partners in one night; they were using condoms for 2-3 cases, and in the fourth or fifth cases, they might not be using it. This type of situation was not for the rejection from the client side; the Hijra, himself/herself, was also responsible

Moreover, when sex is sold in a narrow place because of time constraints, in many instances, the condom is either unavailable or does not have time to wear. The KII stated that even in such a situation, the condom cannot be worn correctly; for example, due to hurry in terms of the finishing point of the sexual act, the condom can also be torn. Besides, to earn, they must complete the sexual act within a short time, as they have to have sex with another client. The reason is money; at the end of the day, the money among the group of Hijras is divided among themselves in many cases. The lives of the Hijras are more at risk; they are floating people, so they need to be educated more.

“They lack a static home; one day they are staying in one place, and the next day they are moving to another place because the house owners are less interested in giving rent to the ‘hijra’. But we are trying our best to make them aware about HIV prevention.”

The KIIs also described the PWIDs as being associated with high-risk substance abuse, making them unable to work effectively. KIIs identified common myths among the PWIDs that injections reduced the use of condoms, including that anal sex is less risky than vaginal sex and that sex with women has a higher risk of HIV transmission since women are exposed to multiple sexual partners. They said that giving information about these myths would be useful during counseling. However, some KIIs stated that counselors often feel hopeless when faced with KPs who say that they prefer sex without a condom. They feel they lack the skills to explore the reasons for this context and could not follow a suitable solution to reduce such risk-taking behavior. Many KIIs said that KPs are having unprotected sex for pleasure; if the rejection of condom use emerges from their side, as understood indirectly through the conversation session, there is little scope to protect them through counseling.

The KIIs’ descriptions also matched with that of the KPs’ statements. The KPs felt that only ‘promiscuity’ can cause sexual risk-taking issues. If they are faithful toward a steady partner that is rooted in love, condom use is not a necessity. Attraction and trust related to condom use are mentioned by some KIIs.

“At first, they think that they can get an infection only if they have sex with a woman, specifically if they go to a brothel. But when they are involved in an education program, they know that if they have sex with their fellow man, they can infect each other. Because they are not fully aware of each other’s sexual behavior.”

Additionally, the KIIs acknowledged the greater risk for HIV and STIs among MSM and suggested improving risk awareness to HIV prevention among MSM. The awareness program should include messages about how dangerous HIV is, how they are more at risk when they practice anal sex, and the importance of condom use. Despite describing all the KPs, the KIIs emphasized the MSM as generally, they are more unlikely to use condoms,

“They do not like them’ or ‘they get more money without a condom.”

“When trust in their respective sexual partners increased, condom use tended to fall. We are using condoms, but now we are lovers, so we can have sex without a condom (MSM).”

The KIIs with DIC managers (Total-8) also described that the most common cause of not using condoms is the key populations’ economic crisis, resulting in not using condoms during sexual intercourse for clients’ satisfaction and getting extra payment. As a result of non-consistent condom usage, KPs are becoming susceptible to STIs and HIV/AIDS. One KII mentioned that the adolescent population among the key populations is more prone to such situations because of a lack of negotiation power. Another cause is the mobility of the sex workers, as staying at a permanent place for a long time reduces their value in sex work. As a result, they keep shifting residences to get involved with more partners and become more susceptible to STIs.

Another reason for HIV/AIDS proneness stated by a KII:

“Chem-Sex’: having sexual intercourse after taking drugs. The partners take drugs, and the girls get forced to take drugs too. As a result, they lose their usual sense and do whatever they want while having sex.”

To eliminate this situation, some DIC managers suggested getting the partners of the KPs under the HIV/AIDS health education program. Then, they would be motivated to use condoms and not force the KPs to negotiate on inconsistent and improper condom use.

Healthcare-seeking behavior among key populations

A comprehensive range of healthcare services is offered by DICs, including condoms and lubricants, HIV/AIDS education and counseling, syringes for PWIDs, blood investigation services, and referral services for key populations. So, DICs continue to be vital in the provision of healthcare to key populations. Due to privacy violations and providers’ judgmental attitudes toward them based on their profession, their sexual orientation, and their gender nonconformity, the key populations do not feel secure getting services from alternative healthcare settings.

The findings of KIIs highlighted the consequences of adverse health system experiences for KPs in the social health domain. The KPs tend to avoid and/or fear the health system. Also, the sub-standard health care facility could not meet the needs of the KPs; the worst case, as stated by the KIIs, is the judgmental attitude of the service providers toward the KPs.

“You are doing a sin (MSM), come out from these sinful activities, and automatically you will be cured.”

“Do not come here. We do not provide services to people like you who engage in these shameful activities.”

KIIs also often reported stress when KPs faced difficulties in effective risk-reduction counseling. One KII described the difficulties and challenges of counseling faced by non-MSM providers,

“What I am supposed to be counsel which is a sin to me (Non-MSM Provider), so how can I help him?”

Regarding the healthcare-seeking behavior of the Hijras, the providers often ask unnecessary questions or do physical examinations that seem awkward to them and match with the information provided by the Hijras. The Hijras mentioned that the providers lack knowledge about them. They are often misinformed about the resemblance between gender identities, which results in inappropriate treatment. Conversely, Hijras individuals frequently reported a lack of medically trained providers about the biological anatomy of Hijras other than the providers of the DIC facilities. The necessary treatment they received from the providers of the DIC is due to the training of the providers.

One of the Hijra’s peer leaders reported her personal experience,

“I was at first asked to stand in the girls’ queue, but after hearing my name, they asked me to move to the boys’ queue. Then I was sent to a male doctor’s room. He again sent me to the female doctor’s room.”

The same situation has also been described also by others. Our findings indicated that Hijras people face challenges in general health facilities; In addition to the stigma, the KIIs reported that the healthcare providers lack competency in biological anatomy and education, resulting in improper treatment. Other results revealed other aspects of Hijra’s healthcare experiences in the referral facility that included a focus on discrimination and stigma at the facility system level,

“At the outdoor, the Hijras have to stand in a line. There are separate lines- one for men and another for women. So, in such a situation, they are confused about which line they belong. In many cases, some people throw them out. However, this situation is improving, and we expect more improvement day by day.”

Another peer leader described her experience with an AIDS patient, highlighting the providers' perspectives on key populations, particularly concerning STIs and HIV/AIDS issues.

“I brought an AIDS patient with me to the public hospital. They refused to admit the patient. A nurse screamed, saying, 'Go away, go away.' I burst out in anger—such ridiculous behavior.”

One of the DIC managers has pointed out that key populations deny seeking care from government facilities because the providers of DICs already know that the patient is a sex worker, which the government doctors do not know. So, when a patient has an STI or such a problem, they ask about their sexual history, which seems uncomfortable to the key populations. As DICs cannot provide all the services to the key populations, they have to go to public hospitals. DICs play an important role by maintaining liaison between the public hospitals and the key populations. DIC providers themselves take the KPs to those public hospitals regarding any services not available in DICs, and due to that, the hospitals and doctors from those institutions do not have to ask questions, which the KPs find awkward. However, there is still much work to be done to increase the key populations' access to health care at all levels, including policy, institutional, provider, and individual levels.

Experiencing violence among key populations

Key populations frequently experience many types of violence, including physical abuse, sexual, verbal, and financial abuse. FSWs and Hijras experience the most violent incidents. Societal gender norms and

socioeconomic disparities are most likely to influence this. The most frequent violence against FSWs and Hijras is assault, forcing them to have sex with others, and not paying the promised money. These are evident from both IDI and KII.

Therefore, among many other concerns, these violent incidents draw attention to one in particular: the KPs' growing risk of HIV/AIDS by decreasing their likelihood to condom use. The peer leaders' and DIC managers' points of view regarding this are also the same.

One of the DIC managers shared the following:

“Clients take them, saying that there will be one or two, but after reaching there, they find out that five to six men force her to have sex, in most cases without condoms. This makes everyone involved in such activities vulnerable to HIV/AIDS.”

KIIs also discussed the negative activities and attitudes shown by the KPs. Additionally, the KPs engage in a lot of violent and unlawful acts. Their involvement in such activities is likely a result of their poverty and lack of education.

Situation during COVID-19

Most of the participants of all the four key population categories declined in adherence to social distancing during the COVID-19 pandemic. This was mainly because they wanted to avoid withdrawal from income-generation activities. Those involved in street-based sex work, many reported ceasing activities at first but later returned to work despite their concerns about contracting COVID. Although worried like her, many participants were found to be continuing in sex work. This was their necessity in the absence of sufficient social and economic support.

“Yes, it put not just me but a lot of FSWs in terrible straits because our income is cut overnight.”
“During the COVID-19 period, some of them had no clients. They had to live in starvation.”

The FSWs engaged in sex work also described reduced partners even though the social distancing restrictions were eased which was linked to customer's health concerns. The pandemic made the customers scared about the FSWs. Due to the unstable economy, doing sex work during COVID limited their ability to stand up for clients who refused to use condoms.

“I have children at home, and I have to feed them. I went to the streets and did sex work even without condoms, as per the clients' choice.”

Chapter 4: Conclusion and Recommendations

This study mapped and estimated the size of key populations at risk of HIV across all the districts of Bangladesh, describing the insights of their presence and distribution. It also collected behavioral data to identify HIV risk behaviors. Based on the study findings, the following recommendations are proposed to formulate policy and programmatic actions:

1. To ensure robust stakeholder engagement in HIV programs, it is imperative that the findings and data from the study are thoroughly discussed, interpreted, and comprehended at all levels, including the relevant ministries and government officials, especially the National HIV/AIDS programs, program personnel, and implementing agencies like international NGOs and the government. This will facilitate effective planning, target setting, informed service development, and optimal utilization of resources in national HIV programming.
2. The insights obtained from this study should be utilized for judicious allocation of resources, programmatic goal-setting, and the formulation of HIV prevention and treatment strategies to ensure comprehensive coverage of key populations.
3. The key population size estimates suggest relatively stable numbers for the FSW and PWID populations, but there has been an increase in the estimated sizes of MSM/MSW and Hijra populations compared to previous MSE studies. IBBS conducted in 2020 documented upward trends in HIV and syphilis prevalence among these two key populations. Therefore, it is imperative to urgently focus the intervention strategies on these two communities to curb the further rise in HIV infections within the KPs.
4. This study represents a significant milestone by employing a GIS mapping system, offering precise geolocations for all the spots within the 22 districts directly surveyed and presented in this report. It is highly advisable to capitalize on this spot mapping data to plan for the mapping of facility-based and community-based programs, including the establishment of DICs (Drop-in Centers).
5. A notable strength of the study was the active engagement of all stakeholders and the community at every stage of the research process. Consequently, the estimates were accepted without much contention, instilling a strong sense of ownership regarding the enumeration results. Nevertheless, since the estimates were extrapolated across 42 districts, it would be prudent for the implementing agencies to undertake local-level mapping before commencing HIV prevention services in the extrapolated districts. This would allow for a more detailed understanding of the precise numbers of key populations and the specific locations frequented by them.
6. This study is the fifth round of size estimation for HIV-risk populations in Bangladesh. Over time, there has been a gradual evolution both in the methods employed for estimation and in the estimated sizes of key populations (KP). A significant finding from this study is the observed increase in the number of MSM/MSW populations, although it falls below the expected percentage suggested by UNAIDS/WHO. This lower estimate can be attributed to the stigma associated with this population and its cultural discordance within the Bangladeshi context, where religion exerts considerable influence. Looking ahead, there is potential for the introduction of new innovative approaches, to estimate the sizes of MSM/MSW and other KPs through online surveys. In addition to physical mapping, the incorporation of these innovative approaches to reach the hidden population holds

promise for achieving more accurate estimations as well as providing the needed services to them, especially in settings where same-sex sexual activities are criminalized by law.

7. Though it is suggested to use the point estimate data as the denominator for calculating program coverage, it's essential to consider that this data is inflated after applying all correction factors. Consequently, reaching all individuals under the static service delivery center approach may prove challenging. Furthermore, in resource-constrained settings where expanding the number of service delivery centers is not feasible, probably, traditional peer-to-peer outreach and static service centers won't suffice to provide services to KP scattered throughout the districts. Therefore, encouragement to utilize government facilities and explore internet-based interventions is suggested. As a good number of KPs use mobile and internet-based apps for their communication, online services about HIV prevention messages and information on service centers should be planned to link them to government health facilities as per their requirements.
8. Programs targeting behavior change in KPs should be focused on promoting the consistent use of condoms, lubricants, sterile syringes, and routine HIV testing. Service facilities (DICs) are still not widely available in intervention and non-intervention districts. For example, the health-seeking behavior of KPs for STIs and the number of KPs engaged in routine testing for HIV are low. Therefore, emphasis should be given to driving the KPs towards acquiring health support from government facilities. The government and non-governmental organizations (NGOs) should play an active role in guiding KPs towards government facilities via outreach activities. Expanding upon these ongoing initiatives, it is crucial to prioritize the capacity building of service providers. This can be achieved through continuous training and preparation. Additionally, fostering cultural sensitivity within service locations and among staff members through quality assurance measures and regular training is essential. To further enhance inclusivity, it is imperative to raise public awareness through the development of anti-discrimination policies. On the other hand, there is a need for a change in the mindset of KPs that in the future they need to learn how to take the services from the health service delivery centers like other mainstream populations, avoiding the stigma and discrimination they usually face. Frequent approaches towards acquiring health services will sensitize and pressure the health authorities to acknowledge the rights of KP.
9. Enhancing efforts to promote safe sexual practices, safer injection practices, increase condom use, and facilitate access to comprehensive prevention services tailored to the specific needs of each KP group should be continued and strengthened.
10. Based on the observation by the field study team and documents review, increasing drug use patterns and the rising number of other drug users, it is recommended to conduct a comprehensive national size estimation for all types of drug users. This estimation will provide valuable insights into the scale of drug use across the country, facilitating the development and implementation of specific interventions, treatment programs, and harm reduction strategies. Additionally, it will enable policymakers to allocate resources effectively and address the growing challenges associated with drug abuse and its impact on public health and societal well-being.
11. There are multiple layers of challenges for all types of key populations, as their lives are characterized by poverty and physical danger. The results provided ample illustration of the powerlessness of some KPs over their partners, resulting from the fear of losing partners and hence the money needed for their basic living needs. These findings suggest that future HIV prevention programs should provide FSWs with training in communication and persuasion skills to build good

relationships with partners and promote mutual support for safe sex. Additionally, the motivation of the healthcare providers both at DICs and referral facilities is needed to improve the women's mental and physical well-being, which would impact their access to healthcare referral facilities.

In conclusion, leveraging this data holds great potential for significantly enhancing HIV/AIDS control efforts within key populations in Bangladesh. The insights and suggestions derived from this research are poised to serve as valuable directives for policymakers, program strategists, and those responsible for execution. These insights can help in the creation of precise and impactful interventions aimed at combating the HIV epidemic among key populations, fostering health equity, and advancing the broader objective of ending AIDS by the year 2030.

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**ANNEX- 1:
EXAMPLE OF ADJUSTING CORRECTION FACTORS FOR
MAPPED DISTRICTS AND EXTRAPOLATING FOR THE
UNMAPPED DISTRICTS**

Example of Adjusting Correction Factors for Mapped Districts and Extrapolating for the Unmapped Districts

A. Correction of mobility factor for PWID in Gazipur district

Data required for calculation	No. or % of PWID at each site
Number of PWID observed in Gazipur during the standard peak time (summed across all sites in the district)	597
Proportion estimated to solicit at 2 sites during standard peak time	22%
Assuming that each PWID who solicits at 2 sites spends 1/2 hr/her time at each site. The adjustment for mobility is the total number of PWID in the district multiplied by the correction factor (1 minus 1/2 of the proportion who visited 2 sites)	Mobility correction factor $= 1 - (0.22/2)$ $= 0.89$ Thus, no. of PWIDs, corrected for mobility. $= 597 \times 0.89$ $= 531$

B. Correction for frequency of visiting sites

Data required for calculation	Mapped number of PWIDs Proportion who solicited at mapped sites during standard peak time (as per survey data if available), or else as per estimates from key informants
Assumptions	PWIDs weekly behaviour is roughly the same (i.e. they will generally solicit on the same days of the week)
Number of PWIDs observed in Gazipur district during the standard peak time (summed across all sites in the district)	Before mobility adjustment: 597 After mobility adjustment: 531
Estimated proportion of PWIDs who do not appear at venues during the standard peak time (as a proportion of all PWIDs who solicit at venues in the course of a week)	14%
Assuming that 14% of PWIDs would be missed during the standard peak time	Calculation for frequency correction for PWIDs who were not present at mapped sites during the standard peak time in Gazipur district: $= 531 / (1 - 0.14) = 618$

C. Correction for hidden factor

Mapped number of PWIDs	597
Mapped number corrected for mobility and frequency	618
Correction for hidden population (those who do not frequent venues)	
Estimated proportion of PWIDs who do not appear at venues during the standard peak time (as a proportion of all PWIDs who solicit at venues in the course of a week)	12%
Mapped no. corrected for mobility, frequency & hidden population	Calculation for hidden factor for PWIDs who were not present at mapped sites during the standard peak time in Gazipur district: = $618 / (1 - 0.12) = 702$

D. Extrapolation across clusters:

Table A-1: Estimates of PWIDs using extrapolation for cluster-4.

District	Population 2022	Male population (15-49 years)	Mapped number, corrected for mobility, frequency and hidden population	Population proportion for point estimate (%)	Extrapolated Point Estimate	Point estimate (mapped + extrapolated)	Mapped Min Size	Population proportion for minimum estimate (%)	Extrapolated Min Size	Min Size estimate	Point estimate
a	b	c	d	e	f	g	h	i	j	k	l
BARISAL	2,570,450	570,196	601	0.11		601	471	0.08		471	601
GAZIPUR	5,263,474	1,669,472	702	0.04		702	531	0.03		531	702
NARAYAN GANJ	3,909,138	1,137,578			1138	1138			796	796	1138
JESSORE	3,076,849	811,758			812	812			568	568	812
KHULNA	2,613,385	708,823			709	709			496	496	709
DINAJPUR	3,315,238	855,596	1202	0.14		1202	941	0.11		941	1202
Average				0.10				0.07			

In table A-1, shows how ‘National estimates for PWID using extrapolation across clusters’ was done. Total population of Gazipur district was 5,263,474 (population census 2022 of which 1,669,472 was Male population between the age group of 15 yaers-49 years. Population proportion for point estimate (column-e) and minimum estimated (column-i) for Gazipur District was calculated through dividing Point estimate (column-d). and minimum estimate (column-h) by Male population between the age group of 15 yaers-49 years (column-c). Likewise, population proportion for point and minimum estimates were calculated for Barisal and Dinajpur districts. Then both types of proportion i.e. point (0.10) and minimum (0.07) of all three districts were averaged. Effects of these average numbers were given by multiplying with Male population between the age group of 15 yaers-49 years for the non-mapped districts (Narayangonj, Jessore and Khulna).

This table A-1 illustrates the methodology employed for 'National estimates for PWID using extrapolation across clusters.' The total population of Gazipur district was 5,263,474 according to the population census of 2022, out of which 1,669,472 were males aged between 15 and 49 years. To calculate the population proportion for point estimates (column-e) and minimum estimates (column-i) in Gazipur District, the point estimate (column-d) and minimum estimate (column-h) were divided by the male population aged 15 to 49 years (column-c). The same procedure was followed to calculate the population proportion for point and minimum estimates in Barisal and Dinajpur districts. Subsequently, both types of proportions for all three districts were averaged. These average numbers were then utilized by multiplying them with the male population aged between 15 and 49 years for the non-mapped districts (Narayanganj, Jessore, and Khulna) for calculating their point and minimum estimates. The point and minimum estimates of remaining two districts (Mymensingh and Rajshahi) under cluster-4 were calculated by using same procedure and later on finalized through consultation meetings with stakeholders.



**ANNEX- 2:
SPOT MAP OF THE SURVEY DISTRICTS**

