

HIV SECOND GENERATION SURVEILLANCE IN PAKISTAN

NATIONAL REPORT ROUND II 2006-07

**NATIONAL AIDS CONTROL PROGRAM
MINISTRY OF HEALTH
CANADA-PAKISTAN HIV/AIDS SURVEILLANCE PROJECT**



Canadian International
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développement international

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ACRONYMS

AFIP	Armed Forces Institute of Pathology
AIDS	Acquired Immune Deficiency Syndrome
CDCU	Central Data Coordinating Unit
CIDA	Canadian International Development Agency
DBS	Dried Blood Specimen
EIA	Enzyme Immunoassay
FSW	Female Sex Worker
HASP	HIV/AIDS Surveillance Project
HIV	Human Immunodeficiency Virus
HRA	High Risk Activity
HRG	High Risk Group
HSW	Hijra Sex Worker
IBBS	Integrated Behavioral and Biological Surveillance
IDU	Injecting Drug User
KI	Key Informant
L1	Level 1
L2	Level 2
MSW	Male Sex Worker
NACP	National AIDS Control Program
NGO	Non-Governmental Organization
PACP	Provincial AIDS Control Program
PKR	Pakistani Rupee
RDS	Respondent Driven Sampling
SD	Standard Deviation
SDP	Service Delivery Program/Package
SGS	Second Generation Surveillance
SIUT	Sindh Institute of Urology
SRS	Systematic Random Sampling
STI	Sexually Transmitted Infection
TA	Take All
UC	Union Council
VCT	Voluntary Counseling and Testing

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Dr. Sohail Abbas
Field Director
Canada-Pakistan HIV/AIDS Surveillance Project

FOREWORD

Over the past thirty years HIV and AIDS has emerged as a major developmental challenge throughout the world. At present the South Asia is fighting a decisive battle against this daunting challenge. Pakistan, which is the second largest country in South Asia, stands only a few steps behind India and Nepal in terms of HIV epidemic. Despite many efforts, the HIV infection rate has increased significantly in last few years and infact, the country has moved from a low prevalent situation to concentrated epidemic with HIV prevalence of more than 5% among two high-risk groups i.e. injecting drug users (IDUs), and Men who have Sex with Men (MSMs).

The current HIV and AIDS situation in the country needs an expanded response to curtail this scourge and being fully cognizant of the fact, the government of Pakistan is enhancing its unprecedented vision in fighting HIV and AIDS by building up partnerships and acting in synergy with all stakeholders to ensure large scale, sustained and more effective and efficient multi-sectoral response with a shared vision and common goal to holdback the spread of HIV and AIDS.

This consorted, integrated and un-abating effort needs to be supported and guided by clearly targeted, well-designed and analyzed biological and behavioural data that can provide scientific footings to design and implement programme interventions.

The HIV and AIDS Second Generation Surveillance System (SGS) that was established with Canadian support in 2003 as a part of Enhanced HIV and AIDS Control Programme (EHACP) has played an instrumental role to track HIV related biological and behavioural trends in the country. Results from previous rounds i.e. pilot in two cities and round one in eighth cities not only provided valuable information to programme implementation, but opened new arenas for surveillance and research in local context. The present report, which details the results of round two Integrated Biological and Behavioural Surveillance (IBBS), is a continuation of the process. This report provides national level information on key biological and behavioural risk factors among high-risk groups from twelve major cities of the country to develop relevant and targeted interventions that can materialize the desired behavioural change among these groups.

This report is the result of sincere dedication, handwork and persistent dedication of a large number of people, organizations, and institutions. Here, I would really like to acknowledge the efforts and devotion of Agriteam and HASP team in making this a reality. My heartiest acknowledgment also goes to the contributions of the representatives of NACP, PACPs, Research Institutes, NGOs, SIUT, AFIP and all others who have worked hard to make it a reality. I would also love to thank and appreciate all the respondents who participated in this survey. Field Director, HASP and his national and provincial team deserves special mention for all their efforts to come up with this useful report. I also appreciate the guidance and support provided by the Canadian Project Director and all the technical members of Agriteam.

At the end I would love to emphasize that the government of Pakistan is fully committed to working with international development partners, and greatly appreciates the unaltered support of CIDA, as without their contribution this would have not been possible.

Dr. Asma Bokhari
National Programme Manager
National AIDS Control Programme

EXECUTIVE SUMMARY

This report provides mapping, and biological and behavioral information of HIV related high risk groups (HRGs) from the 2nd round of surveillance, conducted from July, 2006 – March, 2007 in Pakistan.

Phase one of this study consisted of a rapid, geographic mapping of four HRGs, including Female Sex Workers (FSWs), Male Sex Workers (MSWs), Hijra Sex Workers (HSWs) and Injecting Drug Users (IDUs) in 12 major cities across all four provinces. The cities included Karachi, Hyderabad, Sukkur and Larkana in Sindh; Lahore, Faisalabad, Multan, Gujranwala and Sargodha in Punjab; Peshawar and Bannu in NWFP; and Quetta in Balochistan. The purpose of the mapping activity was to estimate the size, location and operational typologies of these four HRGs in each city. The mapping methodology consisted of dividing the cities into geographical zones, and within each zone interviewing key informants to obtain information about the location and size of each HRG. Information collected in level one was verified in level two by interviewing FSWs, MSWs, HSWs and IDUs. The mapping study was followed by a cross-sectional behavioral and biological survey of these HRGs. A total number of 13,110 FSWs, MSWs, HSWs and IDUs were interviewed. The mapping data provided sampling frames, and diverse sampling techniques were used to draw representative samples of the key populations in each city. Behavioral data were gathered from these population samples using a structured questionnaire covering socio-demographic information and risk behavior indicators identified from the literature on HIV. Informed consent was obtained prior to conducting interviews. Biological data were gathered using the capillary “Dried Blood Specimen” (DBS) methodology, chosen for its ease of collection, storage, shipping, and serological accuracy. The interviewers were trained in dried blood spot collection and infection control processes. Appropriate infection control measures were followed during the procedure. A debriefing session was held with the participants on completion of the questionnaire and drawing of a biological sample, to answer participant queries. Information on HIV prevention and available services including voluntary counseling and testing (VCT) and specified service delivery packages for the HRGs was also provided.

A total of 114,637 persons, located at 18,728 spots, were reported to be engaged in HIV related high risk activities (HRA), in the 12 cities mapped. The largest HRG consisted of 49,037 FSWs located at 7,598 spots, which accounted for 42.8% of all HRGs. With an estimated number of 31,555, spread over 4,199 spots, IDUs were the second largest HRG in Pakistan. The combined number of MSWs and Hijras were 34,045 spread over 6,931 spots, and accounted for 29.7% of all HRGs.

Results of biological testing showed an overall HIV prevalence of 15.8% (95% CI: 14.7, 16.9) among IDUs. Concentrated HIV epidemics (HIV prevalence of >5%) were reported in eight of the 12 cities included in the survey. Sero-prevalence of HIV among HSWs was 1.8% (95% CI; 1.3, 2.5) and 1.5% (95% CI: 1.0, 2.0) among MSWs. Only one FSWs tested positive for HIV.

Although overall HIV prevalence was low, risk behaviors were widespread in all types of commercial sex work. FSWs had an average of 2.6 clients per day. Twenty-three percent reported “always using a condom with clients” in the last month. Eighteen percent of FSWs were carrying a condom at the time of interview. Approximately 69% of FSWs had heard of HIV/AIDS. Among those, knowledge of sexual intercourse as a mode of transmission of the disease was prevalent among 80% of FSWs, but only about 37% knew that HIV can be transmitted by a sharp instrument/ needle (syringes). While 11.4% of FSWs were aware of HIV prevention programs in their city, only 2% reported utilizing these services.

Both MSWs and HSWs had an average of 2.3 clients a day. Eight percent of MSWs and HSWs reported that they “always used a condom with their clients” in the last month. Consistent with this, less than 22% of MSWs and HSWs reported condom use during anal sex for the last reported sexual intercourse with a paying client, and only 10% used a condom for oral sex with their last client. Approximately 50% of both MSWs and HSWs reported using lubricant for anal sex with their last client. Sixty-six percent had heard of HIV and/or AIDS. Among those, knowledge of sexual intercourse as a mode of transmission of the disease was prevalent in 83.2%. Only 16% of both MSWs and HSWs were aware of any HIV prevention programs in their city, and only 3.4% of the total sample reported utilizing these services.

Among IDUs, the average number of injections per day reported was 2.2 ± 1.7 (median = 2). Forty-one percent of IDUs reported always using a new syringe for injecting in the past month. Twenty-eight percent injected with a used needle on their last injection, and 22% passed on their used needle/paraphernalia to another drug user during the past month. Receiving injections by “professional” injectors/street doctors was generally uncommon; 73% reported never receiving an injection from this source. Although 46% of IDUs reported sexual activity with regular female partners in the past six months, condom use was very low (16.5%). Twenty-seven percent had sex with a FSW in the past six months, and only 21% out of those used condoms. Thirteen percent of IDUs paid a MSW or HSW for sex in the past six months. Seventy-four percent of all IDUs interviewed had heard of HIV/AIDS, while only half of them knew that using clean syringes and needles can protect against HIV. Thirty-one percent of IDUs had heard of the HIV prevention programs in their respective cities, but only half of those who knew about programs reported ever participating in them.

In Pakistan, although HIV infection rates among FSWs remain very low, there is evidence of sexual networking between FSWs and IDUs. Overall, approximately 2.3% of FSWs, and 5.7% of both MSW and HSWs reported that they injected drugs. About 10% of FSWs, and 8% of MSWs reported having sex with an IDU, 22% of IDUs reported having paid FSWs for sex, and 13.2% reported paying a MSW/HSW for sex in the past six months. Considering the overlap between IDU populations and high risk sexual networks, the rising HIV prevalence among IDUs will increase the risk of spill-over into these networks of commercial sex workers and their clients.

In conclusion, it is clear from this survey that there are substantial and widespread networks of HRGs in

Pakistan who are at a significantly higher risk of acquiring HIV. The epidemic is expanding in the IDU population in several cities, and MSWs and HSWs are also getting infected. Prevention among these populations remains a key challenge for Pakistan's efforts to curtail the HIV epidemic. Widespread and intensive efforts are required to bring about broad changes in injecting and sexual behaviors of IDUs. In addition, a need for rapid implementation of effective programs to reduce sexual transmission in the male and hijra sex work networks to curtail further expansion of the HIV epidemics in these groups is emphasized. Although HIV has not yet reached female sex work networks to a large extent, there still remains a window of opportunity to further protect FSWs and their partners by scaling up prevention programs. To do this effectively, it is important that this information is integrated into the planning and delivery of prevention programs, and that those implementing these programs are provided with the capacity to use this information to improve their effectiveness.

1. INTRODUCTION

With an estimated prevalence rate of less than 0.1%, Pakistan continues to have a low level epidemic among general population; however, recent surveillance results indicate that the epidemic is beginning to progress in the high risk groups (HRGs). As in several other regions of Asia, the HIV epidemic in Pakistan is characterized by high initial prevalence among injecting drug users (IDUs), with the potential to expand into other HRGs including men who have sex with men (MSM) and female sex workers (FSWs). The relatively widespread presence and interlinking of IDU and high risk sexual networks, combined with low levels of HIV knowledge and prevention methods, indicate that there is potential for a rapid spread of HIV within HRGs and its further expansion to the general population through bridging groups. Substantial and focused prevention efforts are required to minimize the size of this impact and curtail the epidemic at an early phase.

In 2000, the Government of Pakistan through a broad consultative process, developed a National Strategic Framework for HIV/AIDS, that set out broad strategies and priorities for effective control of the epidemic. Based on the recommendations provided by the National Strategic Framework, Government of Pakistan expanded its response to combat the HIV/AIDS epidemic through the Enhanced HIV/AIDS Control Program in 2003. As a part of this response, the Canadian International Development Agency (CIDA) provided assistance for the establishment of an effective national HIV/AIDS surveillance system through the Canada-Pakistan HIV/AIDS Surveillance Project (HASP)¹, which was launched in 2004. To date, HASP has strengthened and expanded the existing NACP surveillance and monitoring system by involving National and Provincial AIDS Control Programs and other stakeholders including non-governmental organizations, research institutions and laboratories in the development and implementation of an effective “second generation” HIV surveillance system.

Second Generation Surveillance (SGS) systems include the active collection of both biological and behavioral data. An effective SGS system: 1) contributes to understanding the dynamics of HIV in the country context (e.g., who is at risk for or vulnerable to HIV infection); 2) provides basic information for focusing and designing interventions proposed within a national strategic plan such as levels and trends in HIV infection; and 3) provides information for decision makers to help them understand the impact of prevention activities in different populations leading to informed policies and program development.

A key component of activities undertaken through HASP is a comprehensive assessment of the size, socio-demographic characteristics, behaviors and HIV prevalence in groups who are at higher risk of HIV and form an important part of the transmission networks through which HIV epidemics can emerge. In Pakistan,

¹ HASP is a CIDA project, implemented by a consortium of Agriteam Canada Consulting Ltd., The University of Manitoba and ProAction: Partners for Community Health, Inc., with technical assistance from the Public Health Agency of Canada.

the HRGs that have been identified include commercial sex workers (female, male and hijra²) and injecting drug users. In 2005, NACP/HASP conducted the first major assessment of these HRGs in eight cities across all four provinces of Pakistan³. The assessment included a rapid mapping to estimate the size, typology and locations of these HRGs. This was followed by a behavioral and biological survey to better understand their socio-demographic and behavioral characteristics, and to assess the current HIV prevalence in these groups. The rapidly increasing HIV epidemic identified among IDUs in Sindh (Karachi, Hyderabad and Sukkhor), interlinking between various HRGs, high risk injecting and sexual behaviors, high levels of other STIs, and low levels of HIV knowledge, provides a clear warning of the potential for a serious HIV epidemic in Pakistan.

This report provides national biological and behavioral information of HRGs gathered between July, 2006 and March, 2007. This report provides data to assess the dynamics of HIV transmission and possible epidemic potential in Pakistan that, in turn, can serve as key information for planning, improving and implementing prevention and care services.

² In Pakistan, the large majority of trans-gendered individuals have a social identity called Hijra, which encompasses gender identity and specific community affiliations and social and cultural identities. Hijras are biologically male but have a female gender identity. Some, but not all Hijras are transsexuals.

³ NACP 2005. HIV Second Generation Surveillance in Pakistan, National Round 1 Report. National AIDS Control Programme, Ministry of Health, Islamabad, Pakistan.

2. METHODOLOGY

2.1 Overview

An assessment was made of four HRGs in twelve cities across four provinces of Pakistan, including five cities in Punjab, four in Sindh, two in NWFP and one in Balochistan. The key populations included: Female Sex Workers (FSWs), Male Sex Workers (MSWs), Hijra Sex Workers (HSWs), and Injecting Drug Users (IDUs). There were two main data-gathering activities:

- Mapping
- Integrated Biological and Behavioral Surveys (IBBS)

The purpose of mapping was to estimate the size, distribution and basic operational typology of these HRGs in each city. The mapping methodology, described in detail in section 2.2, consisted of geographical distribution of each city into zones, and interviewing key informants (KIs) within each zone to obtain information about the location and size of HRGs. Once this first-level information was obtained, a second level of data collection was undertaken with the HRGs themselves (i.e., FSWs, MSWs, HSWs and IDUs) at the main sites mentioned to verify and expand on the information provided by the KIs and to identify key locations or spots that were not obtained at the first level of KI interviews. Thus, the data obtained from this rapid mapping exercise included:

- A list of locations and specific sites where HRGs operate or could be found
- An estimate of the size of each HRGs according to typology (i.e., brothel-based, home-based, *Kothikhana*-based⁴, street-based, call girl)

The second main information gathering activity was an Integrated Biological and Behavioral Survey (IBBS) of the HRGs, consisting of face-to-face interviews and the collection of a blood sample (dried blood specimen or DBS) for HIV testing. The data from mapping were used to draw up a sample of HRGs that was representative with respect to geographic location and typology. In each city, sample quotas for each geographic area and typology were based on mapping estimates. Depending on the characteristics of the sub-population at any given site, one of the following three sampling techniques was used:

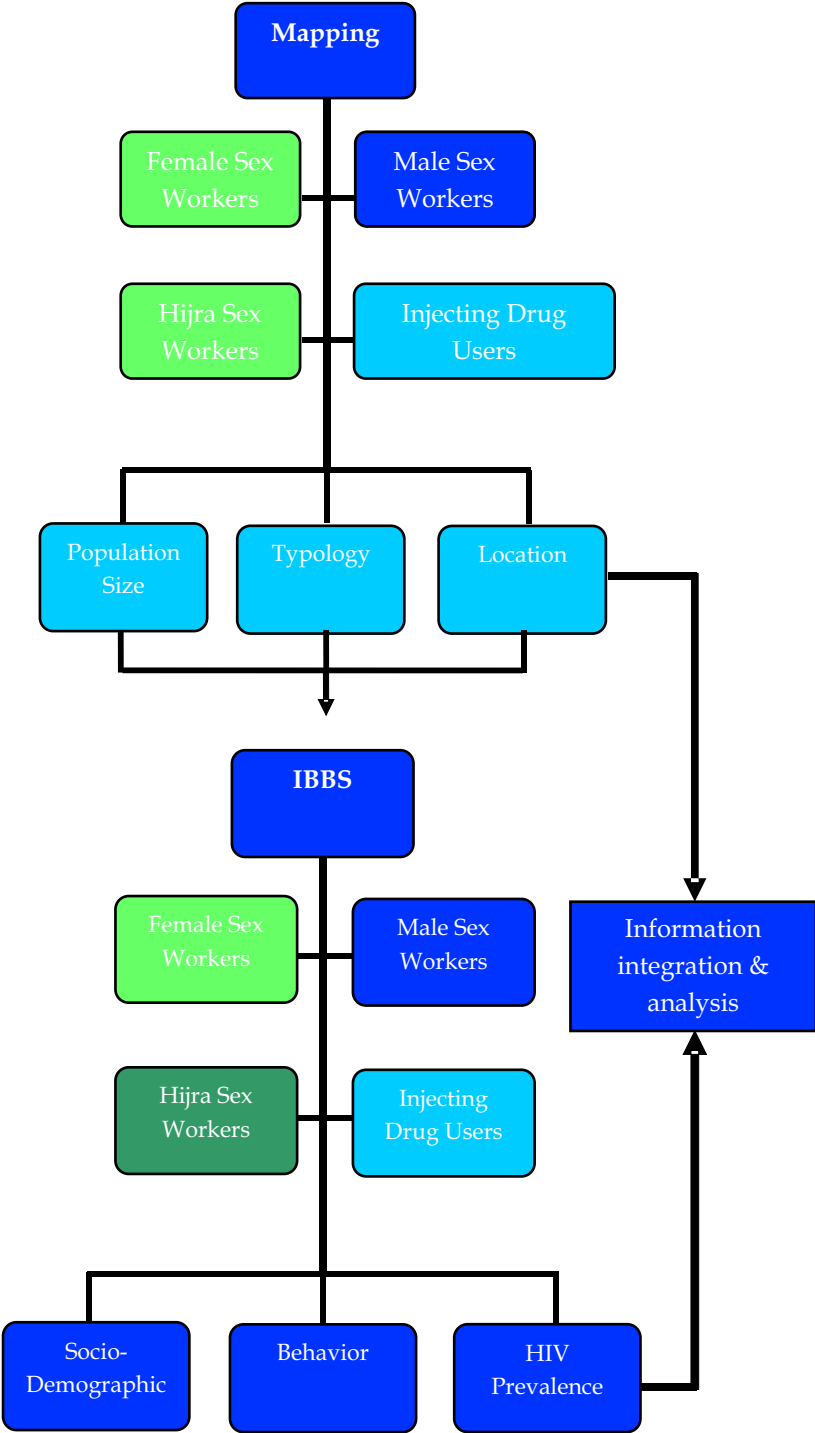
1. Time-location cluster sampling (TLCS), to draw samples from populations that were found in identifiable public places.
2. Respondent-driven sampling (RDS), to draw samples from sub-populations that did not have a well-defined location of operation.
3. Systematic sampling (with a random start), for sub-populations that were fixed in a specific location.

Where the estimated population size was very low, a “take all” (TA) approach was adopted.

⁴ “*Kothikhana*” is a term for a small home or apartment which is rented for a period of time for sex work. The 2 or more FSWs who work in *Kothikhanas* generally also live there.

The following diagram summarizes the data collection methods, and the link between mapping and IBBS data collection.

Figure 2.1a: Illustration of the study process.



2.2 Mapping Methodology⁵

2.2.1 Study Period

The mapping exercise was conducted from July to November, 2006 in 12 major cities in Pakistan. The training workshops for master trainers in each province were conducted in the last week of July and first week of August. The duration of data collection at each site is provided in Table 2.2a.

Table 2.2a: Study period for mapping in each city, 2006-07

Provinces	Cities	Study period
Punjab	Lahore	Aug - Sept 2006
	Faisalabad	Aug - Sept 2006
	Multan	Aug - Sept 2006
	Sargodha	Aug - Sept 2006
	Gujranwala	Aug - Sept 2006
Sindh	Karachi	July - Nov 2006
	Hyderabad	July - Sept 2006
	Sukkhur	July - Sept 2006
	Larkana	July - Sept 2006
NWFP	Peshawar	Sept 2006
	Bannu	Sept 2006
Balochistan	Quetta	Aug - Sept 2006

2.2.2 Mapping Activity

A geographical mapping approach was followed to collect data for HIV/AIDS related high risk activities (HRAs). Box 2a presents the key objectives of the mapping study. In epidemiological terms, the study was a cross sectional survey to identify the locations of HIV/AIDS related HRA. The study also determined estimates of individuals involved in these activities by interviewing key informants (KIs). This information was required for establishing broad sampling frames for execution of an effective sampling procedure in an attempt to obtain representative samples of the target groups. HIV/AIDS related HRAs included injection drug use and commercial sex work. Commercial sex work was further classified according to gender into (i) female sex workers (FSWs), (ii) male sex workers (MSWs), and (iii) hijra sex workers (HSWs). Based on

⁵ Refer to HASP Mapping Field Operations and Monitoring Manual for further protocol details.

results from Round 1, FSWs were further grouped into five sub-categories according to the primary place of HRA: (i) *Kothikhana*-based, (ii) home-based, (iii) brothel-based, (iv) street-based, and (v) call-girl/other sex workers. The entire mapping methodology can be described in four sections:

1. Pre-mapping exercise
2. Level one (L1)
3. Level two (L2)
4. Triangulation and compilation of results

Box 2a: Objectives of Mapping

- To identify locations where key populations engaging in HRA operate and can be reached
- To obtain a sampling frame for IBBS
- To gather basic information on the organization of HRA
- To prepare a list of contacts that can help with access to participants of HRA

The pre-mapping exercise

The pre-mapping exercise helped as a facilitation phase for the actual mapping activity and laid a foundation for field data collection. Among the numerous activities conducted during this phase, some of the most important ones are highlighted below:

- Detailed maps of the target cities were acquired.
- Each city was divided into zones based on administrative units or Union Councils (UC); each zone comprised of two to four UCs (Table 2.2b).
- Field teams were recruited based on their past work experience with vulnerable and/or HRGs as well as experience in mapping studies.
- Field staff attended a four-day training workshop on the basic concepts of HIV/AIDS and the mapping methodology.
- **The key terms, concepts and definitions were finalized;** social mobilizers and local stakeholders were identified.
- Official identity cards were issued for all data collection and field staff by the Provincial AIDS Control Programs (PACPs).
- Local stakeholders (e.g., law enforcement authorities, NGOs, etc.) were briefed about the study and their support was ensured.
- A monitoring and quality assurance system was designed and a time line developed for data collection activities.

Level 1 activity

Level 1 (L1) focused on collecting information from secondary and tertiary KIs about HRA in various geographical locations (known as spots) in each zone, and recording that information in a pre-designed format. Estimates (minimum and maximum) of the number of HRG members involved in HRA were also collected for each spot. A description of the different KIs is provided in Box 2b. A varying number of interviews were conducted in each zone to arrive at a list of spots.

Field team members re-convened at the end of each day to collate the data collected and manually edit and tabulate it. The information assembled served as a foundation for level 2 activities and a fixed number of spots for each HRG in each zone were selected for detailed spot profiling in the final step.

Box 2b: Key Informants and Network Operators

Key Informants (KI's) are persons who are likely to have information on the profiles of the locations as well as estimates of the number of participants in HRA. KI's were classified into three types:

- **Primary Key Informants:** Persons engaged in HRA themselves, (i.e., commercial sex workers and injecting drug users)
- **Secondary Key informants:** Persons who are involved in the network of HRA or intimately acquainted with persons directly engaged in HRA (e.g., pimps, taxi drivers, etc.)
- **Tertiary Key Informants:** Persons involved with HRA in a professional capacity (e.g., police, STI service providers, NGO workers, etc.)

Level 2 activity

The final step in data collection involved conducting KI interviews at the selected spots within each zone. These interviews, called L2 interviews, involved primary KIs and focused on validating the information collected and collated in the previous exercise (L1).

The validation process of *Kothikhana*-based FSWs followed a slightly different methodology. A list of all network operators (i.e., pimps, aunties, madams, etc.) was prepared through snowballing⁶ in each zone; these network operators rather than *Kothikhana*-based FSWs were interviewed.

A similar sort of validation process was conducted for HSWs, in which *Deras*⁷ were profiled through snowballing, and *Gurus*⁸ were interviewed to gather information about specific spots as well as related information about the community. The distribution of zones and the number of L1 & L2 interviews in each target city is provided in Table 2.2b.

⁶“Snow balling” is a technique used to recruit a research sample where existing study subjects recruit further subjects from among their acquaintances; the sample group grows like a rolling snowball.

⁷“*Dera*” is a house where a Guru, along with his own group of Hijras, dwells.

⁸“*Guru*” is a term for the leader or patron of a small group of transvestites.

Table 2.2b: Number of mapping zones and L1 and L2 KI interviews by city, 2006-07

Cities	No. of Zones	No. of Interviews
Lahore	30	3,266
Faisalabad	22	3,104
Multan	20	2,655
Sargodha	10	1,423
Gujranwala	16	2,475
Karachi	51	3,481
Hyderabad	12	905
Sukkhur	6	739
Larkana	5	458
Peshawar	20	2,752
Bannu	4	792
Quetta	15	1,573

Data triangulation

Multiple approaches were followed to triangulate the data. Meetings with law enforcement agencies were held and estimates of HRGs were obtained from members of the local police in selected towns. These estimates were compared with the estimates generated from the mapping exercise. No substantial differences between the estimates generated from the mapping exercise and those obtained from local police were noted. In addition, focus group discussions were conducted with network operators to verify the estimates of *Kothikhana* and street-based FSWs, specific locations and spots.

Box 2c: Mapping of the Brothel Areas

Brothels in Karachi, Lahore, Multan, Larkana and Hyderabad, the only cities in Pakistan to have legal brothels, were enumerated using circle level maps from the Population Census Office. Every building within the demarcated red light area was visited, and a KI from that building was asked if any brothels existed within that building. All buildings that were identified as having brothels were surveyed.

2.2.3 Data Management

Forms were edited by the data management team and corrected for zone name, missing KI typology, and missing spot estimates (i.e., spot without any size estimates of HRGs). All fields were checked, and forms with missing information or without estimates for a given spot were rejected.

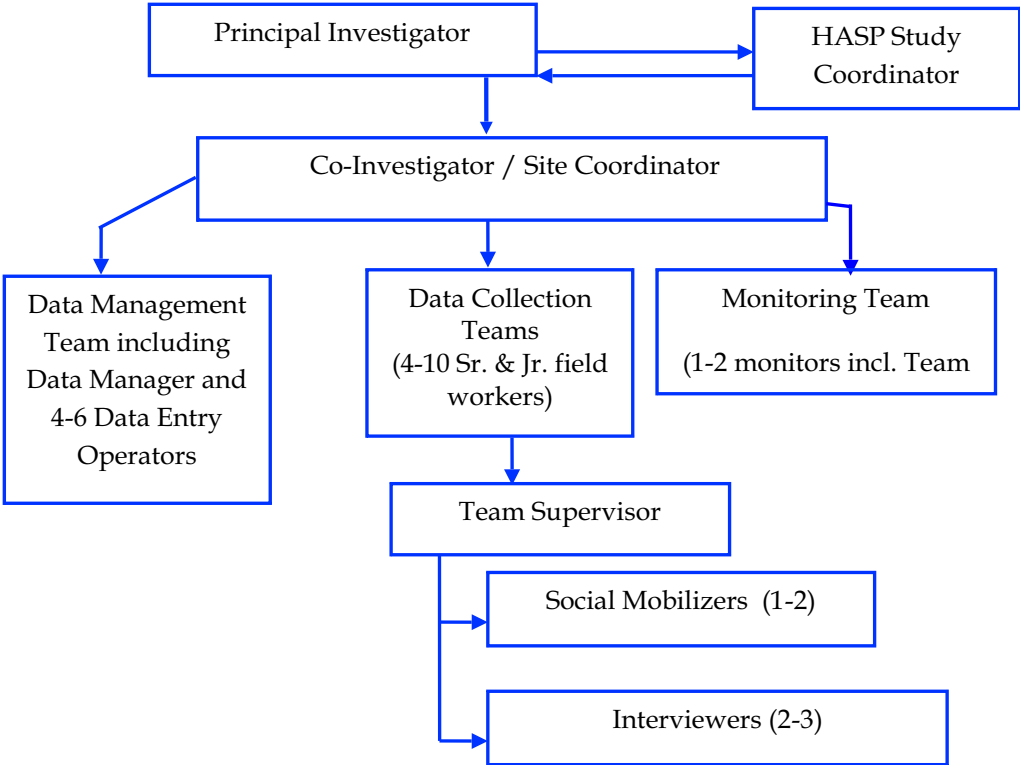
The data were entered into a database specifically designed for the study. To generate final estimates of each HRG, the estimate ranges for each site and location were rolled up, first for a zone and then for the city, to

produce minimum and maximum estimates. The “mean” of the minimum and maximum estimates was used as a single “best” estimate.

2.2.4 Organization and Monitoring of Field Work

Although the number of field teams varied at different locations, a uniform team structure was maintained. The data were collected by trained teams comprising of senior and junior field workers/interviewers. The teams were accompanied by social mobilizers in L2 and in the stage of triangulation. All field data collection was monitored by team supervisors, who reported to the co-investigator or the site coordinator (depending on the team). Field staff was provided with mobile phones to stay in contact with the team supervisors. The monitoring process was designed to provide assistance to the field staff, rather be of a policing nature. In addition to the field teams, a data management team, comprised of a data manager and data entry operators, was also constituted. A study coordinator from HASP worked at each site to facilitate the study, and random spot checks by various senior members of the team, HASP, NACP and PACPs ensured adherence to the protocol (Figure 2.2a).

Figure 2.2a: Basic structure of the field team at a given site



2.3 IBBS Methodology⁹

2.3.1 Study Design, Setting and Population

A cross-sectional behavioral survey was conducted from November 2006 to February 2007 in the 12 cities mapped (Table 2.3a). City selection was based on the presence of multiple HRGs. As in Round 1, the study population in Round 2 comprised of the four HRGs: FSWs, MSWs, HSWs and IDUs (Box 2d).

Table 2.3a: Selected sites for IBBS by province, 2006-07

Provinces	Cities
Punjab	Lahore
	Faisalabad
	Multan
	Gujranwala
	Sargodha
Sindh	Karachi
	Hyderabad
	Sukkur
	Larkana
NWFP	Peshawar
	Bannu
Balochistan	Quetta

2.3.2 Sample Size

Sample size for each HRG was calculated based on assumptions in which baseline HIV prevalence, expected change in prevalence and key behavioral characteristics were varied across a range of likely values to get a maximum sample size. A sample size of 400 was set for each HRG in each city. This sample size provided adequate statistical power:

- To measure prevalence of a characteristic that is present in 50% of the population, with a precision of plus or minus 5%
- To detect a 25% difference in a characteristic that has a prevalence of 40% in a given sub-population (e.g., prevalence of consistent condom use)
- To measure HIV prevalence with a precision of plus or minus 2%, if the prevalence is approximately 5%
- To detect a doubling in HIV prevalence, if the baseline prevalence is between 5% and 6%

The exact number of individuals to be recruited in each city was determined after the mapping results were finalized.

⁹ Refer to HASP IBBS Field Operations and Monitoring Manual for further details on protocol.

Box 2d: Study Subjects and Case Definitions

Injecting Drug Users (IDUs)

Inclusion Criterion

A person who has injected drugs, for non-therapeutic purposes in the past six months

Exclusion Criteria

- Age: under 18 yrs (lower age limit for the age of consent for research)
- Not willing to participate in the study/ unwilling to provide informed consent
- A person who appears to be, in the interviewer's judgment, incapable of understanding the information provided about the survey (e.g., due to intoxication, dope sickness, or the person is cognitively impaired, etc.)
- A person who has already participated in the survey in the current round

Female Sex Workers (FSWs)

Inclusion Criterion

Any female who undertakes sexual activity with a man in return for money or other financial benefits irrespective of site of operation (i.e., street, brothel, home, etc.)

Exclusion Criteria

- Age: under 15 yrs or over 45 yrs
- Not willing to participate in the study/ unwilling to provide informed consent
- A person who appears to be, in the interviewer's judgment, incapable of understanding the information provided about the survey (e.g., due to intoxication, dope sickness, or the person is cognitively impaired, etc.)
- A person who has already participated in the survey in the current round

Male Sex Workers (MSWs)

Inclusion Criterion

Any male who undertakes sexual activity with a man in return for money or other financial benefits

Exclusion Criteria

- Age: under 15 yrs or over 45 yrs
- Not willing to participate in the study/ unwilling to provide informed consent
- A person who appears to be, in the interviewer's judgment, incapable of understanding the information provided about the survey (e.g., due to intoxication, dope sickness, or the person is cognitively impaired, etc.)
- A person who has already participated in the survey in the current round

Hijra Sex Worker (HSWs)

Inclusion Criterion

Any transvestite/transsexual who undertakes sexual activity with a man in return for money or other financial benefits

Exclusion Criteria

- Age: under 15 yrs or over 45 yrs
- Not willing to participate in the study/ unwilling to provide informed consent
- A person who appears to be, in the interviewer's judgment, incapable of understanding the information provided about the survey (e.g., due to intoxication, dope sickness, or the person is cognitively impaired, etc.)
- A person who has already participated in the survey in the current round

2.3.3 Sampling Design and Technique

A representative sample of different HRGs was obtained through probability sampling. A sampling frame was developed in the mapping study and additional HRG typologies were further enumerated. Based on the results of mapping, the total sample size was distributed proportionally into various subgroups. The sampling design varied for each target group based on experience from Round 1:

- **IDUs** were recruited through *Multistage Cluster Sampling*, except where the estimated number of IDUs was smaller than the required sample size (400) and the “take all” approach was used.
- **FSWs** were recruited on the basis of the place of HRA: *brothel-based FSWs* were **recruited through systematic random sampling**; *street-based FSWs* through *multistage cluster sampling*; and *home/KK-based FSWs* were recruited through randomly selecting network operators/pimps from each cluster and snowball sampling was used within clusters.
- **MSWs** were recruited through RDS.
- **HSWs** were recruited through cluster sampling in which a list of all *Gurus* was developed at the end of the mapping study and then *Gurus*, selected randomly from the list, were utilized to recruit eligible subjects.

2.3.4 Data Collection Instrument

Data were collected by trained interviewers using structured questionnaires. The questionnaires were designed in English and subsequently translated into Urdu; the Urdu versions were used to collect the required data. Questionnaires included questions on socio-demographic and personal characteristics, as well as a core set of risk behavior indicators to monitor the behavioral patterns in the key populations. The following are the principal variables for which data were collected:

- **Socio-demographic variables:** age, gender, education, living arrangements, family information, income, migration status, employment and professional background.
- **Profession related variables (especially for sex workers):** category of worker, place of sex work, number of clients, charges, types of services offered, etc.
- **Injecting risk behavior & practices:** Types of drugs used and their routes of administration, length of drug use and injecting careers, drug use in group, sharing of equipment and needles, frequency of drug use/injecting, internal travel within Pakistan, etc.
- **Sexual risk behaviors:** Age of initial sexual intercourse, number of sexual partners, regular and casual partners, condom use, anal/oral intercourse, etc.
- **Knowledge and information about HIV and other STIs:** Knowledge about HIV/AIDS, routes of transmission, methods to prevent transmission, perception of self-risk, etc.
- **Others:** Donation of blood, health seeking behavior, availability and utilization of health services, etc.

2.3.5 Training on IBBS Data Collection

The field teams participated in a four day workshop, which focused on providing information and points of clarification to the interviewers on issues such as:

- Understanding HIV/ AIDS: facts and myths
- Basic interviewing skills with special emphases on interviewing about sex and injecting drug use issues
- Sex, gender and HIV/ AIDS, and the importance of collecting and analyzing sex-disaggregated data
- Values and attitudes
- Different aspects of field work
 - accessing vulnerable groups
 - subject selection and recruitment process
 - explaining the rationale and objectives of the study to the subjects
 - ethical issues including confidentiality
 - acquiring informed consent
 - collecting biological samples
 - debriefing and referral process

In addition to lectures and training sessions, actual field visits by the trainees were included in the workshop. Workshop participants included members of the data collection teams (including social mobilizers), data management personnel, field supervisors, representatives of the research institutions and members of the National and Provincial AIDS control programs.

“Code books” for the questionnaires as well as manuals for field activity were provided to help the field workers maintain uniformity and consistency in data collection.

2.3.6 Data Collection and Fieldwork

Venues used for conducting interviews varied depending on HRG type. Brothel-based FSWs were surveyed at brothels while home-based, *Kothikhana*-based and street-based FSWs were brought to a central field office for interviewing and the collection of blood samples. MSWs and IDUs were also interviewed at a central field office, while HSWs were interviewed at their *Deras*.

Informed consent

Informed consent was read aloud for the eligible consenting subject. The consent form provided participants with an overview of the objectives of the study, the confidential nature of the interview, the right of the participants to refuse to answer questions, as well as the right of subjects to end the interview at any time. Consent was also taken to obtain a biological sample (DBS) for HIV testing.

Administration of questionnaire

Eligible participants were first briefed about the objectives of the survey and confidentiality of the interview. This was followed by a face-to-face interview conducted by a trained study interviewer.

Debriefing and referrals

After the completion of the interview, a debriefing session was held with participants so as to allow the interviewer to respond to any questions that the participants may have had. Information was also provided to participants during this session on the modes of transmission and prevention of HIV infection, on the service packages available for individual HRGs. Notably, all participants were referred to local voluntary HIV counseling and testing (VCT) centres/clinics.

2.3.7 Blood Sample Collection and Handling

Upon completion of the interview, participants were requested to provide a blood sample for HIV antibody testing.

Dried blood specimen (DBS)

The capillary DBS methodology^{10,11} for collection of a biological specimen was selected for SGS for following reasons:

- relative ease of collection
- absence of any special requirements for storage and shipping (due to the non-infections nature of DBS)
- potential for the use of the detuned assay with DBS samples to help identify recent HIV infection (incidence)
- potential to identify different strains of HIV
- methodology has been successfully used elsewhere in similar studies

The DBS was collected on a specially designed filter paper with five inscribed circle. Each of the five circles was saturated with drops of blood obtained from the finger tip of the participant using an automatically retractable lancet device.

¹⁰ Solomon S.S. Solomon S, Rodriguez I.I, McGarvey T, Ganesh A.K, Thyagarajan S.P, Mahajan P.A, Mayer K.H. Dried Blood Spots (DBS): A valuable tool for HIV surveillance in developing/tropical countries. Int J of STD and AIDS 2002;13:25-28

¹¹ Serologic Assays for Human Immunodeficiency Virus antibody in dried-blood specimens collected on filter paper from neonates : US Department of Health and Human Services, Public health Services, CDC, Atlanta GA; August 1989

Biological specimen shipping and storing

The DBS were dried and stored at room temperature before sealing in specimen bags. Each specimen bag was coded with a unique ID number of the subject, using a permanent marker (see Section 2.3.9: Ethical Review – Confidentiality). The specimens were handed over to the team leaders and subsequently to the study coordinators on a daily basis by the data collection staff. These were in turn transported on weekly basis to the selected laboratories (Sindh Institute of Urology and Transplantation (SIUT) in Karachi and Armed Forces Institute of Pathology (AFIP) in Rawalpindi) for testing.

Laboratory methods

All DBS specimens were first screened by the HIV Genetic Systems rLAV Enzyme immunoassay (ELISA/EIA) (Bio-Rad USA). Samples that tested positive were subsequently confirmed in duplicate by the Vironostika HIV Uni-Form II EIA (Biomeriux, The Netherlands). The Genetic Systems HIV-1 Western Blot (Bio-Rad USA) was used to confirm the status of any specimen found to be diagnostically indeterminate after EIA testing.

2.3.8 Quality Assurance

At the field level, the co-investigator or site-coordinator in charge of data collection ensured eligibility, completeness and consistency of the completed questionnaires at the end of every day. Independent of the field team, a quality assurance (QA) team was created and visited the field offices randomly on a daily basis. The team confirmed the sampling methodology and verified at least 10% of the questionnaires. The questionnaires were discarded if significant errors were observed.

In order to monitor laboratory performance, both the SIUT and AFIP laboratories were enrolled in a DBS based serology proficiency testing program administered by the National HIV and Retrovirology Laboratories, Public Health Agency of Canada.

2.3.9 Ethical Review

The study protocol was reviewed and approved by the Ethical Review Board of the Public Health Agency of Canada, as well as in Pakistan by HOPE International's Ethical Review Board. This survey was designed to meet international ethical guidelines, specifically addressing the following ethical issues:

- ***Informed consent and voluntary participation*** – Recruitment of participants was conducted only after describing the study procedures and obtaining informed consent. During the process of obtaining informed consent, prospective participants were clearly informed that participation was voluntary and that non-participation would have no negative consequences in terms of access to programs or services. Monetary compensation was provided to participants for their time commitment and inconvenience due to participation. The level of appropriate compensation for

each sub-population was based on consultations with community members, with the objective of ensuring fairness.

- **Confidentiality** – Considerable effort was taken to maintain the confidentiality of participants. This included non-disclosure of participants' identity and the use of a non-identifying coding system to track and link study data. The electronic data was password protected and only authorized officials of NACP/HASP had access to the data files.
- **HIV test results** – HIV test results were kept confidential from study personnel and were not provided to participants. Instead, participants were advised that if they wanted to know their HIV status, the study personnel would facilitate this access through an official HIV counseling and testing service.

2.3.10 Data Management

Data entry was done using standardized computer software developed by HASP. After completion of data entry, the electronic dataset and completed questionnaires were transferred to the Central Data Coordinating Unit (CDCU) at NACP in Islamabad for centralized data storage and analysis. Laboratory results were sent directly to CDCU and linked to the corresponding interview data by an encrypted unique identifier and unique study site code; no personal information accompanied these records. The electronic data was password protected and only authorized officials of NACP/HASP had access to the data files. All hard copy data were stored in a secure room at the CDCU office.

3. FEMALE SEX WORKERS

3.1 Geographic Distribution and Estimates

Mapping estimates indicate that FSWs are the largest HRG in the 12 cities selected for surveillance in Round 2, with an estimated total number of 49,037 at 7,598 spots. City-wide estimates are provided in Table 3.1a, while distribution patterns in the four provincial capitals are provided in Figures 3.1b to 3.1e.

Table 3.1a: City wise estimated number of FSWs in Pakistan, 2006-07

		Brothel	Street	Home	KK	Others	Total
Lahore	Average	450	6,150	2,200	5,700	25	14,525
	No. of Spots	-	1,141	339	200	5	1,685
Multan	Average	75	800	650	1,200	0	2,725
	No. of Spots	-	252	181	84	0	517
Sargodha	Average	-	506	631	75	25	1,237
	No. of Spots	-	136	117	54	3	310
Gujranwala	Average	-	667	554	500	4	1,725
	No. of Spots	-	186	171	119	4	480
Faisalabad	Average	-	3,200	2,700	600	0	6,500
	No. of Spots	-	638	650	45	0	1,333
Karachi	Average	200	7,850	2,600	2,000	500	13,150
	No. of Spots	-	1,154	624	103	61	1,942
Hyderabad	Average	100	1,750	450	-	0	2,300
	No. of Spots	-	166	54	-	0	220
Sukkhur	Average	-	500	1,550	500	0	2,550
	No. of Spots	-	16	119	34	0	169
Larkana	Average	125	100	150	-	0	375
	No. of Spots	-	20	22	-	0	42
Peshawar	Average	-	450	150	200	400	1,200
	No. of Spots	-	154	41	30	114	339
Bannu	Average	-	75	75	75	25	250
	No. of Spots	-	15	35	16	15	81
Quetta	Average	-	1,450	1,000	50	0	2,500
	No. of Spots	-	245	231	4	0	480

Lahore reported the highest number of FSWs, with an overall estimate of 14,525 FSWs found at 1,685 spots. Karachi had the second highest, with an estimated number of 13,150 FSWs found at 1,942 spots, followed by Faisalabad, with 6,500 estimated FSWs at 1,333 spots. While analyzing the various sub-typologies of FSWs, significant differences were seen between the cities (Figure 3.1a).

Street-based sex workers were the largest subtype of FSWs. An estimated 23,498 street-based FSWs were found at 4,123 spots, accounting for approximately 48% of all commercial sex work carried out by females in the 12 cities. Karachi and Lahore had the highest number of reported street-based FSWs with estimates of 7,850 and 6,150, respectively. Home-based FSWs were mainly located in Faisalabad, Karachi and Lahore, while *Kothikhana*-based FSWs were found predominantly in Lahore, followed by Karachi and Multan.

The complexity of mapping *Kothikhana* and home-based FSWs should be kept in mind. Unlike street-based FSWs they do not operate or solicit clients in public. Due to the extremely hidden nature of this group, there is a possibility that the population sizes presented above are under-estimates. However, our study identified an estimated 24,589 FSWs that belong to the *Kothikhana* and home-based categories.

Box 3a: Typologies of Female Sex Work

- **Brothel-based:** Brothels are fixed venues which are owned/operated by madams and/or other individuals or groups. Multiple FSWs live in this house which is licensed for singing and dancing, and which is located in a larger sex work or red light district and entertain clients there. The key feature of typical brothels is that they have a stable location that is known by local clients and brokers. Sex work takes place either at the brothel or at the client's house. Sex workers are usually full time.
- ***Kothikhana*-based:** "*Kothikhana*" is a colloquial expression for a sex work venue that literally means "grand house". However, *Kothikhanas* are generally small premises, which are rented by a madam and/or broker where a small number of FSWs live and entertain clients. *Kothikhanas* are often in residential areas and are largely clandestine and a key feature is that their location moves from time to time when the madam determines that the current location is unsafe or unsuitable.
- **Street-based:** Street-based FSWs solicit clients in public places such as busy streets and intersections, bus and train stations and marketplaces. Sexual transactions then occur at a venue chosen by the FSW and or the client.

Home-based: These Sex workers usually live with their families and are based at their own houses. Clients are solicited using mobile phones and/or through network operators. Sex work takes place either in the client's home or hotels, or a place provided by the network operator. Sex workers are usually part time, operating when required for financial purposes.

The conventional brothel-based FSWs form a very small proportion within the overall population of FSWs; only 950 sex workers were reported to operate from brothel houses in the red light areas of five cities (i.e., Lahore, Karachi, Hyderabad, Multan and Larkana).

In comparison to previous mapping studies, a new group of FSWs was accessed: call girls, who operate through mobile phones to directly contact clients. Although this category is extremely hidden and hard to reach, approximately 1000 in six of the 12 cities were accessed. The largest number was found in Karachi with an estimated 500 call girls. Peshawar reported the second highest number, followed by Sargodha, Lahore and Bannu.

Fig 3.1a: Typology of FSW by city, 2006-07

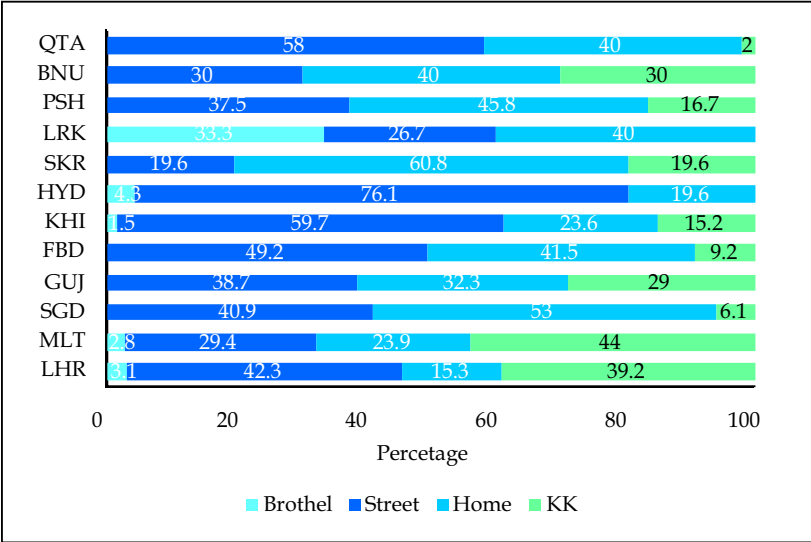


Fig 3.1b: Distribution of FSWs (all typologies) in Karachi, 2006-07

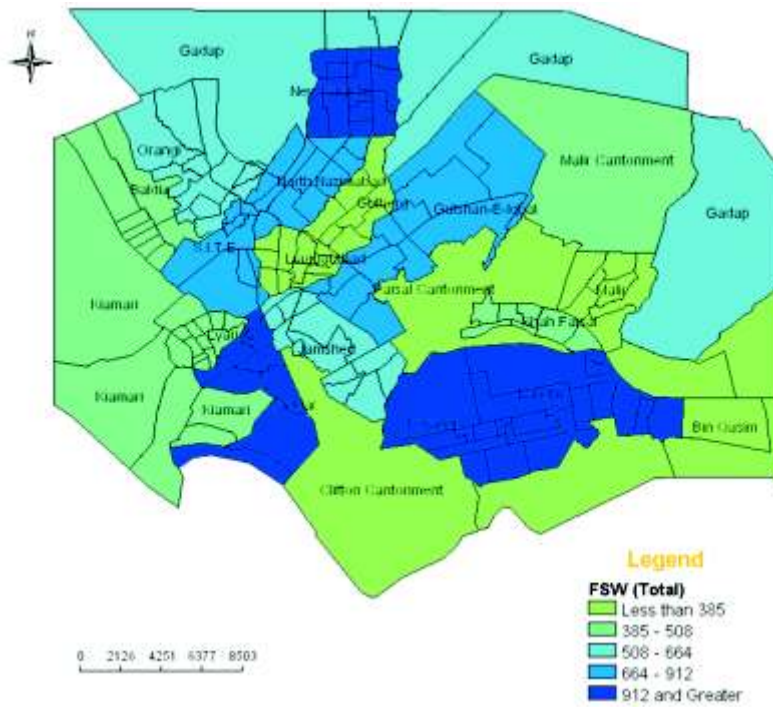


Fig 3.1c: Distribution of FSWs (all typologies) in Lahore, 2006-07

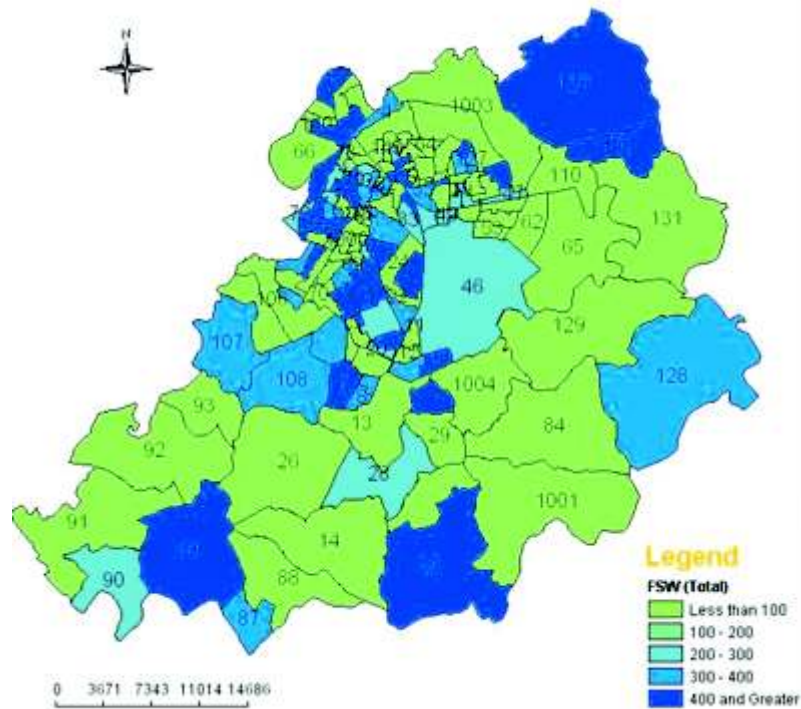


Fig 3.1d: Distribution of FSWs (all typologies) in Peshawar, 2006-07

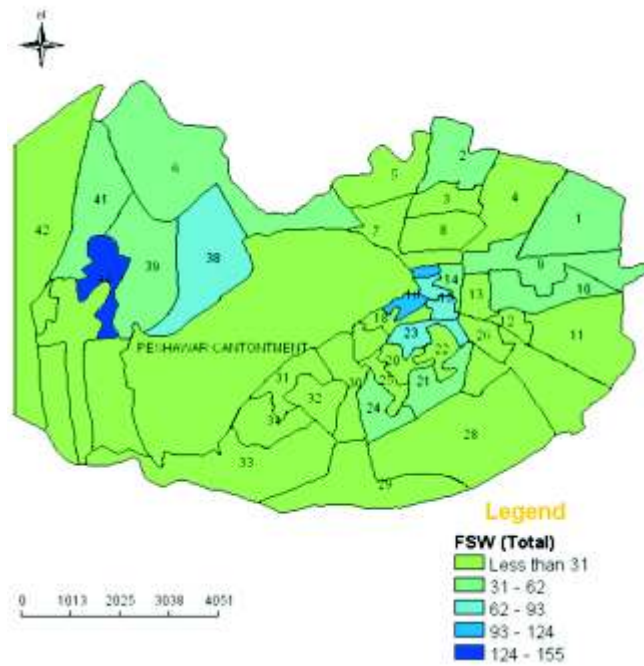
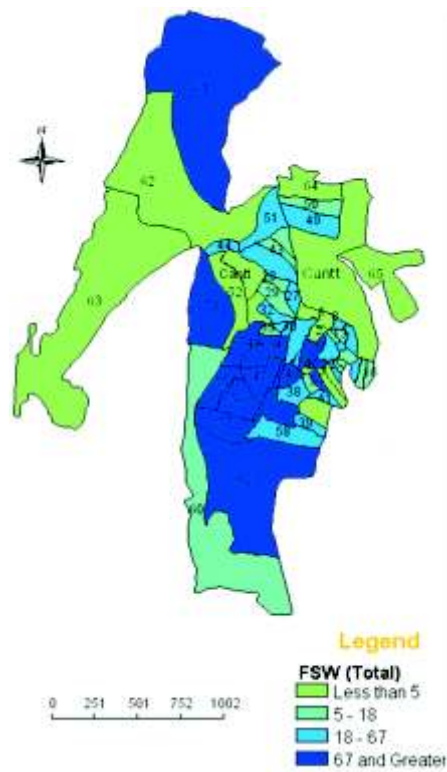


Fig 3.1e: Distribution of FSWs (all typologies) in Quetta, 2006-07



3.2 Socio-Demographic Characteristics

This section describes the key socio-demographic characteristics of FSWs surveyed in 12 cities of Pakistan.

Table 3.2a: Socio-demographic characteristics of FSWs by typology, 2006-07

Characteristics	All FSWs (n=4,639)	Type of FSW				
		Street (n=1,705)	Brothel (n=407)	Home (n=1,533)	Kothikhana (n= 804)	Other (n= 190)
Age						
▪ 15-19 years	10.2%	7.9%	12.5%	11.9%	10.4%	11.6%
▪ 20-24 years	24.3%	20.6%	26.8%	22.7%	32.0%	33.2%
▪ 25-29 years	27.0%	29.6%	23.6%	25.2%	25.4%	31.6%
▪ 30-34 years	17.9%	19.2%	17.0%	19.5%	14.3%	9.5%
▪ 35+ years	20.6%	22.6%	20.1%	20.7%	17.9%	14.2%
<i>Mean age ± SD (median)</i>	<i>27.4±6.7(26)</i>	<i>28.1±6.6(28)</i>	<i>27.1±7(26)</i>	<i>27.3±6.7(27)</i>	<i>26.4±6.5(25)</i>	<i>25.8±6.2(25)</i>
Marital status						
▪ Unmarried	28.0%	24.4%	13.3%	30.9%	33.3%	44.7%
▪ Married	60.8%	65.1%	76.2%	58.3%	53.0%	42.1%
▪ Separated / Divorced	8.6%	8.0%	8.1%	7.8%	11.6%	8.4%
▪ Widowed	2.7%	2.5%	2.5%	3.0%	2.1%	4.7%
Number of children						
▪ None	16.0%	12.6%	27.8%	14.1%	20.4%	16.3%
▪ 1 to 2	33.8%	34.4%	35.8%	31.2%	34.6%	41.3%
▪ 3 to 4	31.1%	33.9%	20.5%	32.8%	30.0%	23.1%
▪ 5 and above	18.8%	18.9%	15.6%	21.9%	14.6%	18.3%
Years of formal education						
▪ Illiterate	59.2%	60.0%	80.1%	59.8%	49.8%	43.2%
▪ Up to 05 yrs	17.9%	16.5%	13.8%	19.2%	19.9%	20.5%
▪ 06 to 10 yrs	19.2%	20%	5.9%	18.3%	23.6%	30%
▪ > 10 yrs	3.4%	3.3%	0%	2.3%	6.6%	6.3%
Migration status						
▪ Migrated ¹²	22.0%	18.2%	46.7%	15.0%	30.0%	23.7%
Living arrangement						
▪ Lives at home	84.6%	91.7%	84.8%	96.3%	47.0%	86.3%
▪ Lives alone	5.5%	5.2%	6.6%	4.8%	7.0%	5.8%
Income from sex work (PKR)						
▪ Median income/mth	8,000	8,000	14,000	6,000	10,000	15,000
▪ Earn > 10,000/mth	43.9%	44.7%	72.8%	35.2%	60.6%	65.5%
Other sources of income	44.9%	51.6%	44.0%	39.9%	51.4%	0.5%

The average age of FSWs across the 12 cities was reported to be 27.4 years ± 6.7 (median = 26), with little variability between different types of FSWs. Further analysis revealed that the largest proportion of FSWs fell between 25 to 29 years of age, and only 10% were between 15 to 19 years of age.

¹² Refers to HRG members who do not belong to the city where they were interviewed.

FSWs initiated sex work at an average age of 22 years, and reported to be involved in commercial sex work for an average period of 5.2 years. Brothel-based FSWs started sex work at a slightly younger age (average 19.2 years) in comparison to other types of FSWs, and continued in sex work for longer (average 7.9 years) (Figure 3.2b).

Stratified analysis showed that FSWs in Multan and Hyderabad were younger (average 24.6 years and 25.1 years, respectively) and began sex work at a younger age (average 19.7 years and 17.5 years, respectively). FSWs in Hyderabad had the longest duration in sex work (average 7.7 years) (Figure 3.2c).

Figure 3.2b: Mean age of initiation and duration in sex work by FSW typology, 2006-07

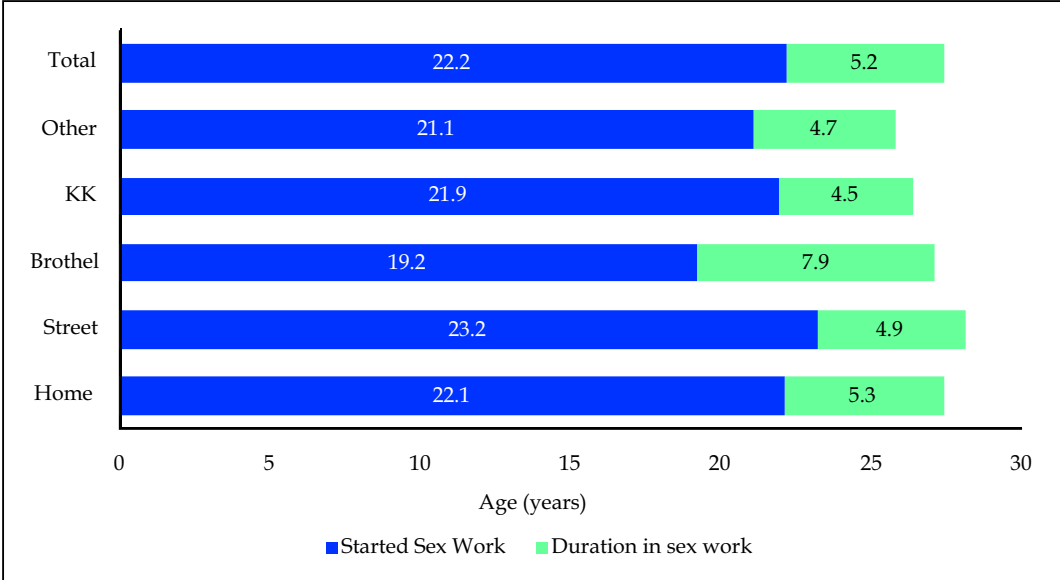
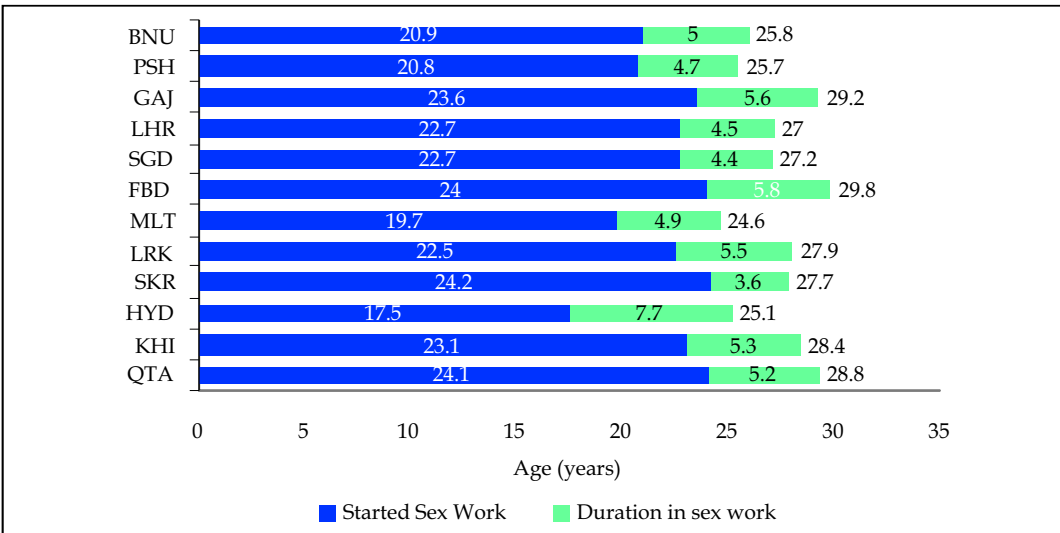
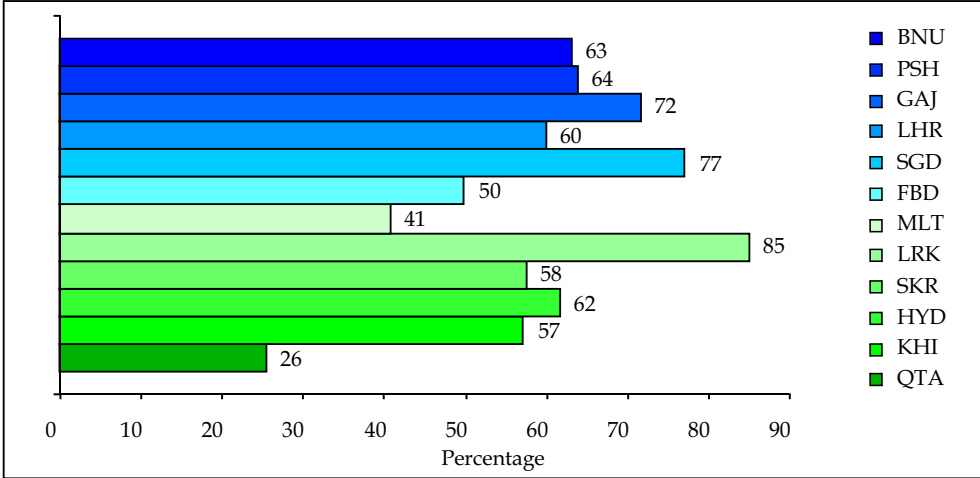


Figure 3.2c: Mean age of initiation, duration and current age of FSWs by city, 2006-07



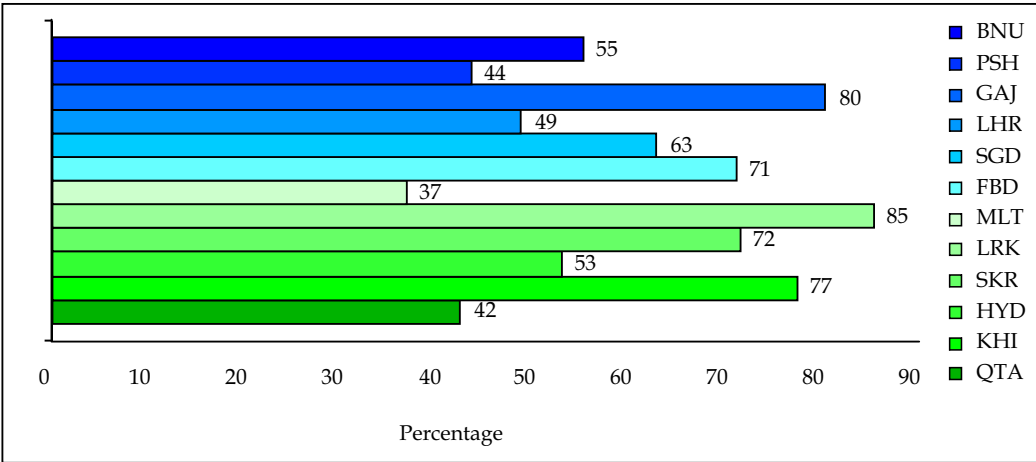
The majority of FSWs interviewed were illiterate (59.2%), with the highest proportion of illiteracy (80%) reported among brothel-based FSWs, followed by street-based and home-based (60%) (Table 3.2a). Education status of FSWs varied substantially across cities, with the highest levels of illiteracy reported in the smaller cities of Larkana, Sargodha and Gujranwala. Illiteracy was lowest among the FSWs in Quetta (25.5%) (Figure 3.2d).

Figure 3.2d: Illiteracy among FSWs by city, 2006-07



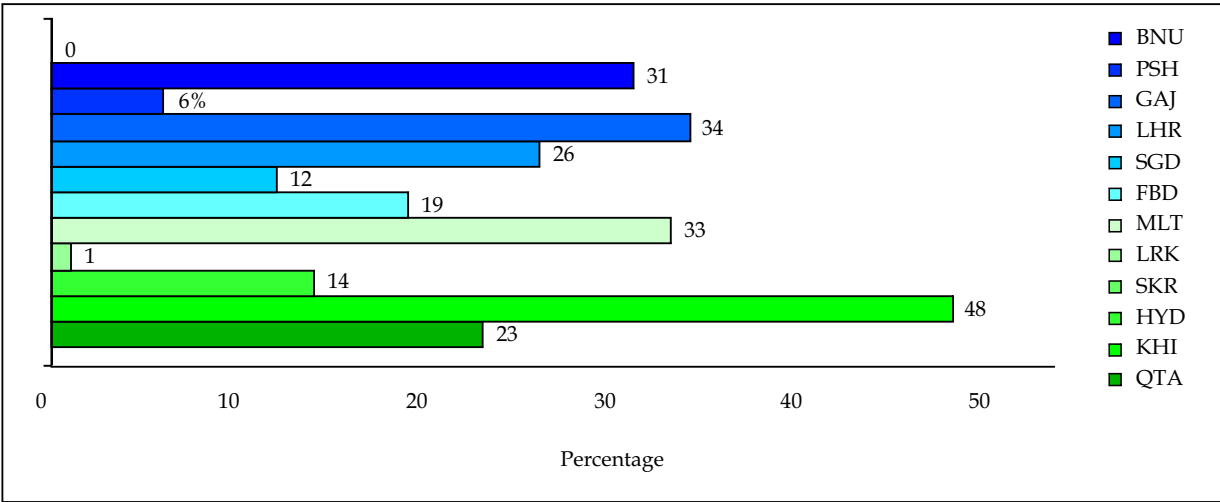
The marital status among FSWs varied across cities; the majority were currently married (60.7%), while a small proportion reported to be either separated/divorced (8.6%) or widowed (2.7%). The largest proportion of unmarried FSWs was found in the call girl/other category (44.7%) (Figure 3.2e). Of those who were married, 16% of the FSWs reported having no children; 34% had one to two children, 31% had three to four children and 19% had 5 or more children.

Figure 3.2e: Marital status of FSWs by city, 2006-07



As in Round 1, the analysis for Round 2 showed that about 78% of all FSWs belonged to the city in which they worked. Brothel-based FSWs were least likely to be natives, with nearly half of brothel-based FSWs having migrated from another city. City-specific analysis showed that FSWs in Karachi, Lahore, Larkana and Peshawar had higher proportions of FSWs who had migrated from smaller cities. In contrast, in smaller cities such as Bannu and Sukkhur, nearly all FSWs reported to be natives, and virtually no migration was reported (Figure 3.2f).

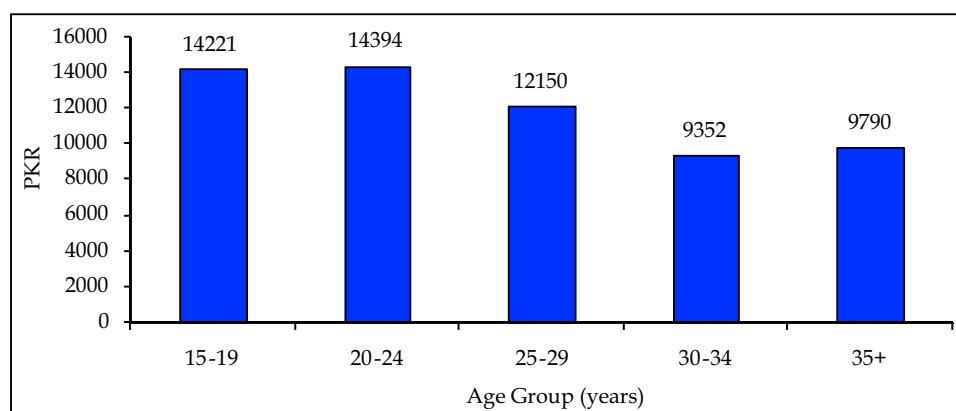
Figure 3.2f: Migration among FSWs by city, 2006-07



Looking at the migratory pattern of the four provincial capitals, most of the FSWs in Peshawar and Lahore migrated from different cities within the same province. In contrast, FSWs in Karachi mainly migrated from Punjab, and large numbers of Quetta-based FSWs reported to have migrated from different cities of Sindh. Cross-border migration from Afghanistan was also reported by FSWs in Quetta and Peshawar. However, the migration reported above may describe a general migratory pattern for the population and may not be associated with sex work.

Analysis of sex work income revealed that the median monthly income for FSWs was approximately PKR 8,000 or USD 133 (average PKR 11,903 ± 11,568). The highest income was reported by brothel-based FSWs (median income PKR 14,000 per month or USD 233); home-based FSWs reported the lowest income levels (median income PKR 6,000 per month or USD 100). It was also discovered that income had an inverse relationship with age (i.e., younger FSWs had higher incomes than the older FSWs, Figure 3.2g). Further analysis showed that approximately 44% of all FSWs earned more than PKR 10 000 per month. In addition, approximately 45% of FSWs had an income source other than sex work, with the main reported occupations being domestic work, factory labor and beauty parlor work.

Figure 3.2g: Average monthly sex work income of FSWs by age group, 2006-07



3.3 Sexual Behaviors and Practices

The largest proportion of FSWs (32.3%) solicit clients by “roaming around” in public places such as busy streets and at intersections, bus and train stations, and marketplaces. Other reported sources of clients were through madams (26%), pimps (12.3%), personal contacts through telephone (20%), and referrals through old clients (8.6%) (Figure 3.3a).

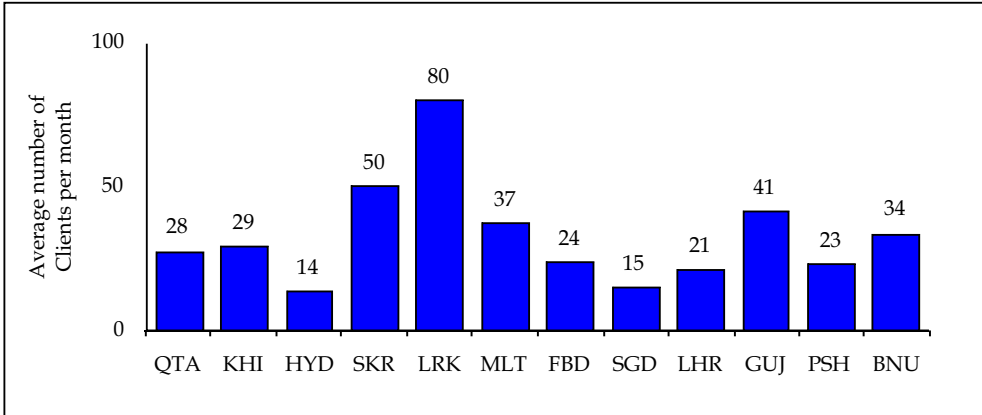
Table 3.3a: Sexual behaviors and practices of FSWs by typology, 2006-07

Practice / Behavior	Types of FSW					
	All FSWs (n= 4, 639)	Street (n=1,705)	Brothel (n=407)	Home (n=1,533)	Kothikhana (n=804)	Other (n=190)
Main source of clients						
▪ Madam	25.9%	9.3%	11.5%	30.9%	61.8%	13.2%
▪ Pimp	12.3%	3.3%	20.4%	19.6%	15.0%	5.8%
▪ Personal telephone	20.1%	16.3%	28.3%	21.1%	10.8%	68.8%
▪ Roaming around	32.3%	67.3%	30.5%	10.5%	6.3%	8.5%
▪ Client referrals	8.6%	3.6%	6.4%	17.3%	5.1%	3.7%
Client information						
▪ Avg # of clients / day	2.6 ± 1.8	2.3 ± 1.3	4.3 ± 3.2	2.4 ± 1.6	2.6 ± 1.7	2.8 ± 1.5
▪ Avg # of clients / mth	33.1 ± 34	28.4 ± 22	56.5 ± 66	31.0 ± 26	35.5 ± 41	26.5 ± 13
Non commercial partners						
▪ At least one	43.2%	48.9%	34%	45.4%	41.2%	6.2%
Consistent condom use						
	23%	20%	42%	19%	23%	35%
Condom use at last intercourse						
▪ Vaginal sex	45.0%	41.5%	67.1%	41.9%	45.0%	55.3%
▪ Anal sex*	7.9%	9.6%	2.2%	5.3%	13.3%	2.1%
▪ Oral sex*	32.4%	44.9%	20.0	33.8%	16.5%	30.0%
Alcohol/drug use during sex in the past 6 months						
	28.2%	28.3%	32.0%	19.8%	40.1%	38.1%
Injected drugs in the past 6 months						
	2.3%	3.4%	1.0%	1.8%	1.4%	2.6%
Sex with injecting drug user in past 6 months						
	9.9%	15.2%	5.7%	6.8%	8.1%	3.7%

*Among those who reported these activities

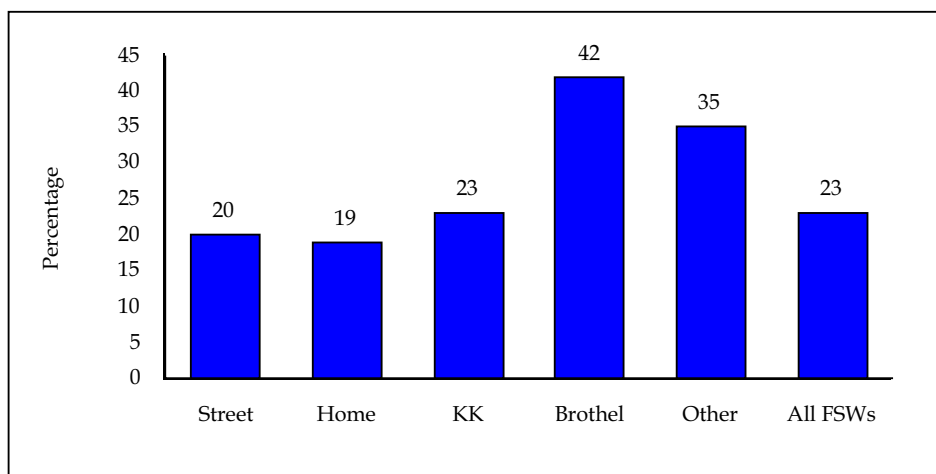
On an average, FSWs serve 2.6 ± 1.8 clients a day. With the exception of brothel-based FSWs (4.3 clients per day), there was little variation in the daily client volume for the other sub-types. This information was triangulated by inquiring about the average number of clients in the past month. In this case, the average was reported to be 33.1, ranging from 26.5 clients per month for call girls/other FSWs to 56.5 clients for brothel-based FSWs. Client volume varied between different cities, ranging from 13.7 clients for FSWs in Hyderabad, to an average of 80 clients per month in Larkana (Figure 3.3a). The higher number of clients in Larkana was due to the fact that more than one third of FSWs interviewed in Larkana were brothel-based and reported to have a higher client volume.

Figure 3.3a: Average number of clients in past month for FSWs in 12 cities of Pakistan, 2006-07



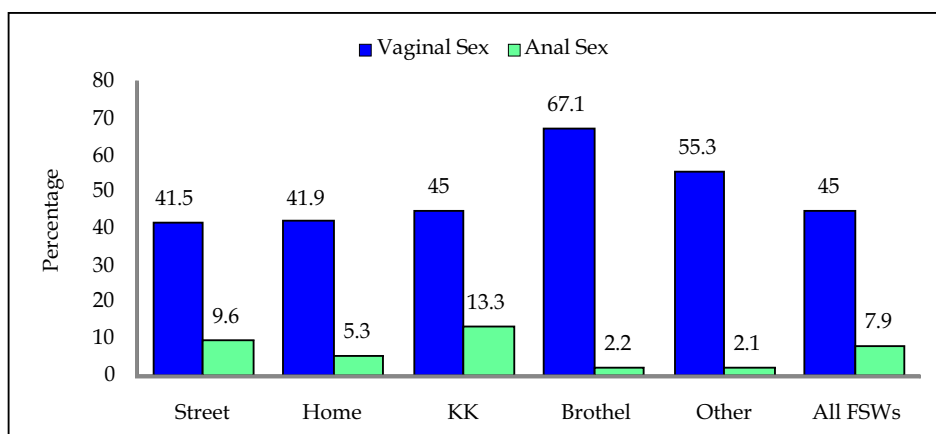
Condom use during sexual activity with clients was found to be low. Only 22.6% of FSWs reported that they “always used a condom with their clients” in the past month (Figure 3.3b). Consistent condom use with client in past month was reported highest for brothel-based FSWs at 42%, and lowest for home-based and street-based FSWs. No differences in consistent condom use were observed between different age groups.

Figure 3.3b: Consistent Condom Use by various types of FSWs with Clients in the Past Month in Pakistan, 2006-07



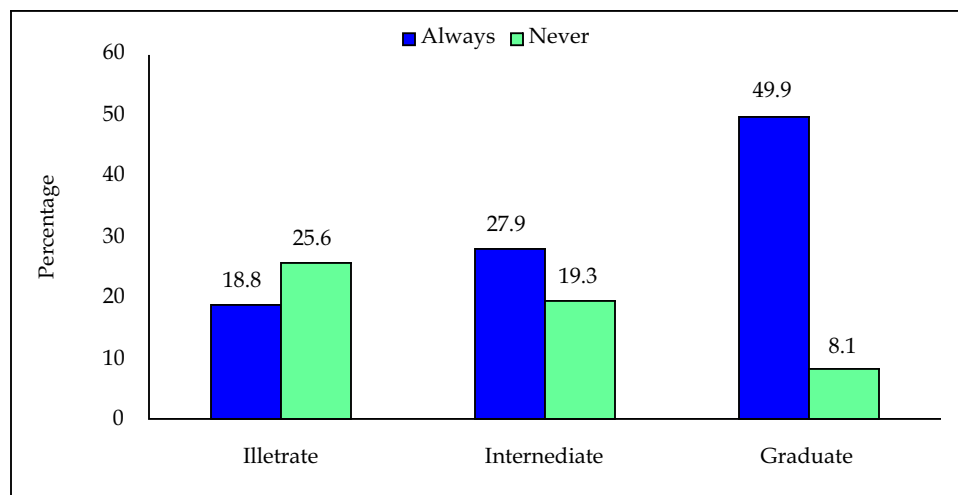
Further analysis showed that a condom was reported to be used by 45% of FSWs for vaginal sex, while only 8% reported condom use during anal sex at the last reported sexual intercourse with a paid client (Figure 3.3c). Brothel based sex workers had the highest reported condom use at 67% for vaginal sex, but just over 2% reported condom use for anal sex with their most recent client (Figure 3.3c).

Figure 3.3c: Condom Use by various types of FSWs at last commercial sexual intercourse, 2006-07



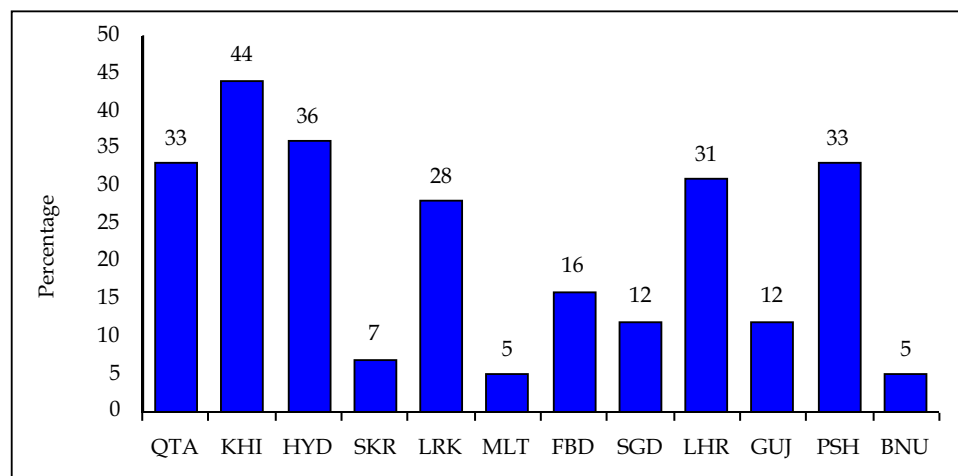
A strong association was seen between consistent condom use and education level. Consistent condom use was lowest among illiterate FSWs (19%), higher among FSWs who were educated up to intermediate levels (28%), and highest among FSWs who were educated up to graduate levels (48%) (Figure 3.3d).

Figure 3.3d: Condom Use by FSWs with Clients in the Past Month by Education Level, 2006-07



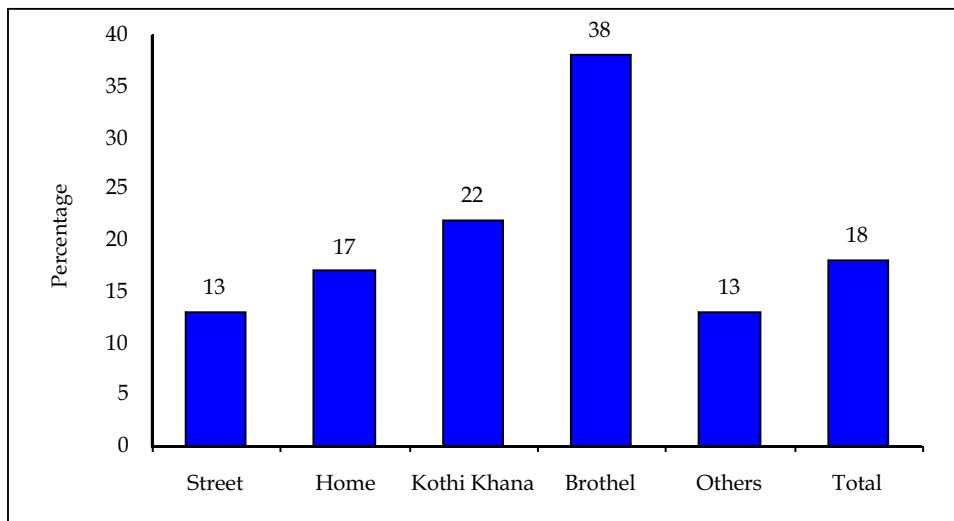
Consistent condom use showed no association with marital status of FSWs. Consistent condom use by FSWs varied considerably between cities (Figure 3.3e), with the highest condom use levels reported in Karachi (44%), followed by Hyderabad (36%), Peshawar (33%), Quetta (33%), Lahore (31%) and Larkana (28%). Reported consistent condom use was lowest in Bannu and Multan (5%).

Figure 3.3e: Proportion of FSWs consistently using Condoms with Clients in 12 Cities of Pakistan, 2006-07



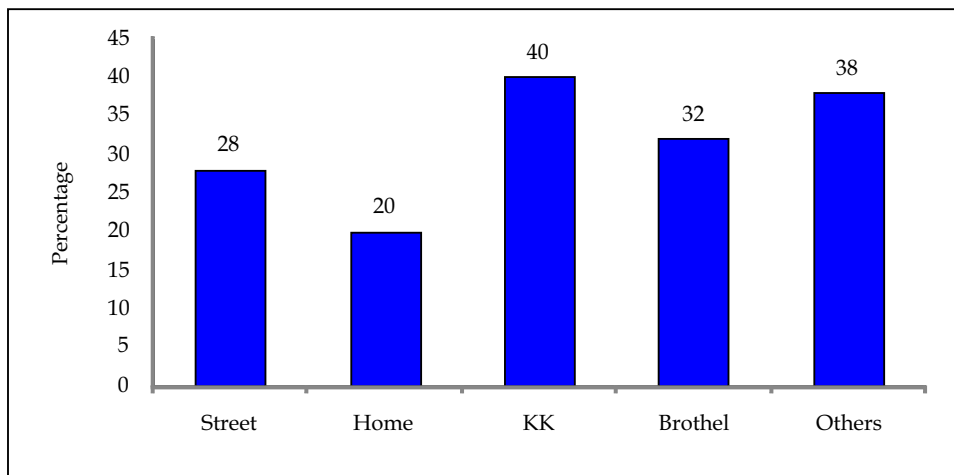
Overall, only 18% of FSWs were carrying a condom with them at the time of interview (Figure 3.3f). This observation was consistent with self reported condom use, as a higher proportion of brothel-based FSWs (37.7%) were carrying a condom than other types of FSWs.

Figure 3.3f: Proportion of FSWs Carrying a Condom at the time of Survey, 2006-07



Overall, 28% of the FSWs reported taking alcohol and/or drugs in the context of sex work in the past six months. *Kothikhana*-based FSWs reported this most commonly (40%), followed by call girls/others (38%) and brothel-based FSWs (28%) (Figure 3.3g).

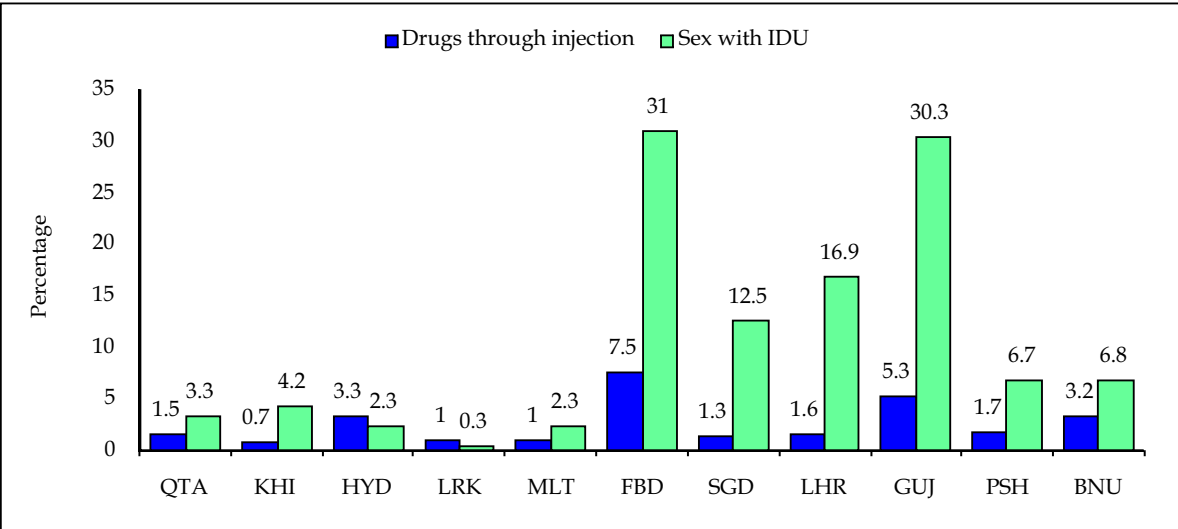
Figure 3.3g: Proportion of FSWs using alcohol and/or drugs during sex in past six months, 2006-07



Approximately 10% of the FSWs reported to have had sex with an IDU in the past six months. Sex with IDUs was reported most often by street-based FSWs (15.2%), followed by *Kothikhana*-based (8.1%), home-based (6.8%), brothel-based (5.7%) and call girls/others (3.7%).

In addition, 2.3% of FSWs reported that they had been injecting drugs during the past six months. Injection drug use was reported most often by street-based FSWs (3.4%) followed by call girls/others (2.6%). City wise distribution of injection drug use by FSWs and having sex with an IDU is provided in Fig.3.3h.

Fig 3.3h City wise distribution of FSWs injecting drugs and having sex with an IDU, 2006-07



3.4 HIV Related Knowledge and SDP Exposure

Table 3.4a: HIV related knowledge, program participation and reported violence among FSWs by typology, 2006-07

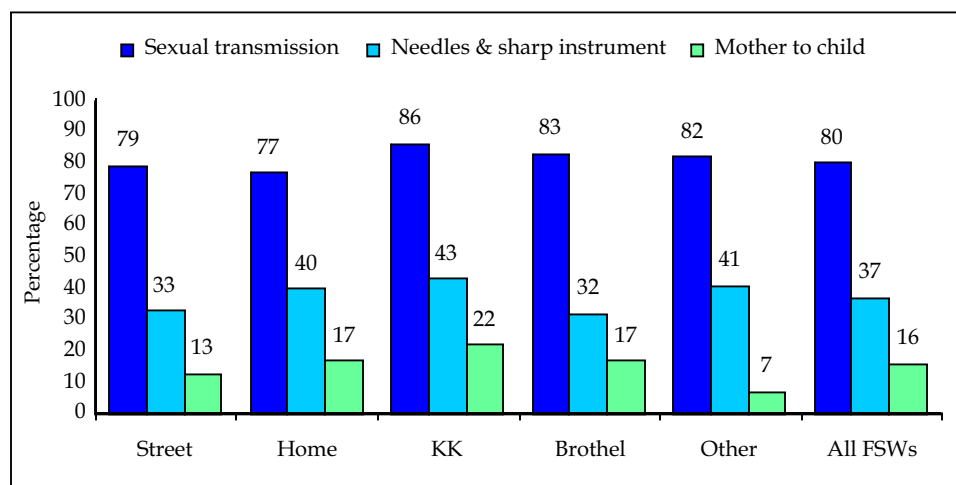
Knowledge area	All FSWs (n=4,639)	Types of FSW				
		Street (N=1,705)	Brothel (n=204)	Home (n=1,533)	Kothikhana (n= 804)	Other (n= 190)
Ever heard of HIV and/or AIDS	68.7%	62.9%	82.3%	68.2%	76.5%	63.2%
Healthy looking person can have HIV/AIDS*	59.7%	58.4%	64.4%	58.0%	65.3%	44.6%
HIV transmitted by sexual intercourse*	80.1%	78.6%	83.2%	76.9%	86.4%	81.8%
HIV transmitted by sharp instrument/needle*	37.3%	32.7%	31.6%	40.1%	43.0%	41.3%
Condoms can prevent HIV transmission*	63.5%	57.7%	77.2%	59.7%	68.7%	84.3%
Sexual abstinence to prevent HIV transmission*	47.0%	50.7%	25.7%	46.6%	55.9%	31.9%
Ever tested for HIV*	7.0%	4.0%	33.1%	3.5%	7.0%	3.2%
Know where to receive HIV test*	19.3%	12.8%	40.5%	18.3%	19.4%	26.4%
Self perception of risk for HIV*	38.0%	36.2%	46.4%	35.3%	43.9%	24.8%
Awareness of STIs	67.1%	67.1%	68.3%	63.3%	76.1%	56.8%
Self-reported STI in past 6 months*	24.4%	31%	20.0%	18.9%	27.1%	6.9%
Receive treatment for reported STI*	81.3%	84.3%	82.4%	76.3%	85.9%	35.7%
Ever heard of HIV prevention programs	11.4%	10.6%	27.8%	7.5%	9.7%	21.1%
Participated in HIV programs	1.9%	1.3%	9.8%	0.5%	1.7%	0.5%
Violence/force for sex in past 6 months	18.5%	24.2%	12.0%	13.8%	19.3%	15.8%
Arrested in the past 6 months	8.9%	13.1%	5.9%	6.3%	6.6%	7.9%

*Valid percentages (i.e., of those who “ever heard of HIV and/or AIDS”)

Approximately 69% of FSWs had ever heard of HIV/AIDS. The highest level of awareness was reported by brothel-based FSWs (82.3%), while street-based FSWs were least aware (62.9%). Of those FSWs who had heard of HIV/AIDS, approximately 60% believed that a healthy looking person can have HIV/AIDS.

Knowledge of sexual intercourse as a mode of transmission of the disease was prevalent among 80% of FSWs, but only about 37% knew that HIV can be transmitted by a sharp instrument/ needle (syringes). Knowledge of mother to child transmission was still lower (16%) (Figure 3.4a).

Figure 3.4a: Knowledge of modes of HIV transmission among FSWs by typology, 2006-07



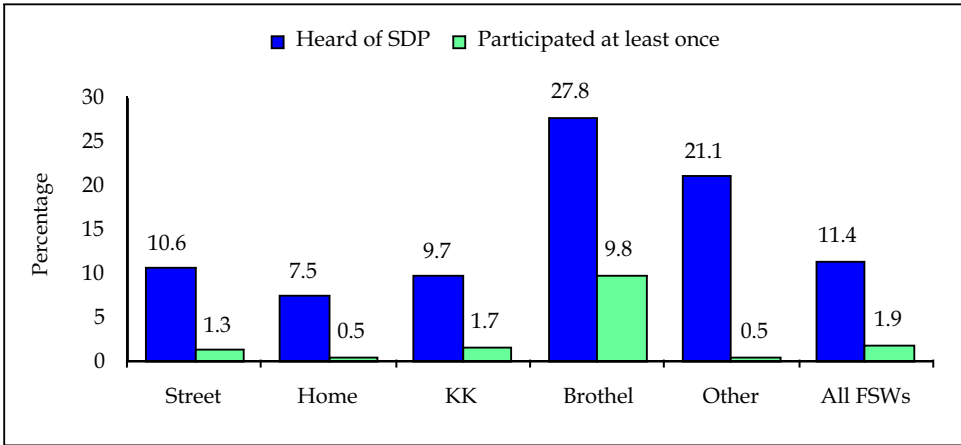
Approximately 64% of those FSWs who had heard of HIV/AIDS, knew that condom use is an effective method of prevention, and 47% believed that sexual abstinence is effective (see Table 3.4a). While only 38% of FSWs believed that they are at a risk of acquiring HIV, 76% knew of a place where they could be tested for HIV. City wide distribution of some key variables is provided in Table 3.4b.

Table 3.4b: HIV related knowledge among FSWs by cities, 2006-07

CITY	HIV/AIDS transmitted by sexual Intercourse	Condom to prevent HIV/AIDS	Know where to receive HIV test	Ever tested for HIV
Quetta	75.9%	72.9%	18.4%	2.8%
Karachi	86.5%	78.8%	30.9%	14.4%
Hyderabad	86.6%	78.2%	9.1%	8.3%
Sukkhur	93.7%	86.8%	4.6%	0.5%
Larkana	74.0%	71.7%	56.6%	16.5%
Multan	68.9%	44.0%	26.1%	8.5%
Faisalabad	71.9%	47.8%	5.2%	2.8%
Sargodha	70.2%	38.6%	17.2%	4.1%
Lahore	87.3%	68.5%	19.7%	15.8%
Gujranwala	84.6%	47.6%	3.7%	1.5%
Peshawar	87.1%	81.2%	15.7%	3.3%
Bannu	75.5%	44.9%	8.3%	0.5%

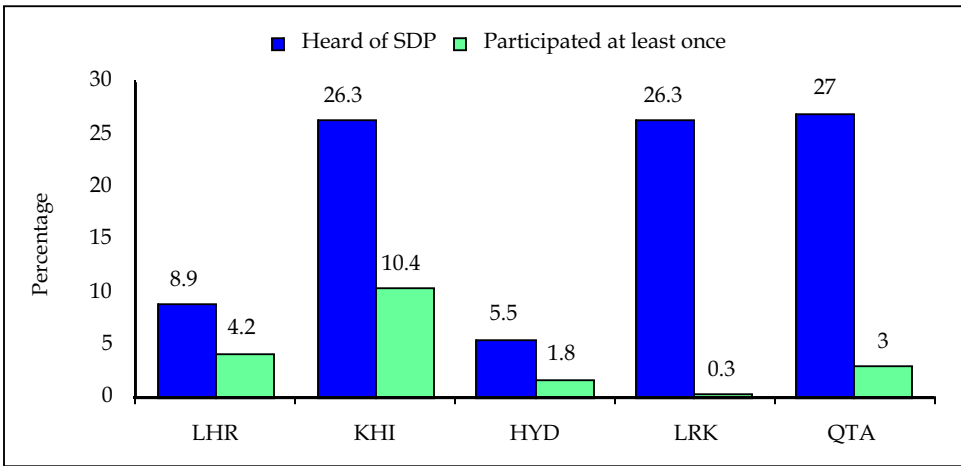
Among different types of FSWs, brothel-based FSWs showed higher levels of awareness regarding self risk for HIV, had knowledge of places where they could be tested, and reported a higher rates of testing than other FSWs (Table 3.4a).

Figure 3.4b: Knowledge and participation in HIV prevention programs among FSWs by typology, 2006-07



While 11.4% of FSWs were aware of HIV prevention programs in their city, only 2% reported utilizing these services. It is interesting to note that even though FSWs had the knowledge of these service delivery programs (SDPs), participation in such activities was almost negligible. Among brothel-based sex workers, 28% reported that they were aware of these services, but only 9.8% utilized the services of such programs (Figure 3.4b). The awareness and utilization of these programs among other sub-types of FSWs was even lower. Program knowledge varies substantially across all the cities, with the highest proportions in Karachi, Lahore and Quetta (Figure 3.4c).

Figure 3.4c: Knowledge of and participation in HIV prevention programs among FSWs by selected cities, 2006-07



Although SDP usage was low to negligible among FSWs, there were obvious differences seen in the knowledge and awareness level of FSWs who had been utilizing these services in comparison to those FSWs who have not been in contact with SDPs (Table 3.4c).

Overall, 18.5% of FSWs reported violence or other means of force in exchange for sex in the last six months. Violence and forced sex was more commonly reported by street-based FSWs than any other sub-type. Arrest during the past six months was reported by a relatively low proportion of FSWs (9%); street-based FSWs reporting this more commonly than other sub-types (13.1%) (Table 3.4a).

Table 3.4c: HIV knowledge levels among FSWs by SDP usage, 2006-07

HIV knowledge indicator	FSWs ever utilized SDPs	FSWs never utilized SDPs
▪ Healthy looking person can be infected with HIV	70.6%	59.4%
▪ HIV can be transmitted by		
○ sexual intercourse	96.5%	79.7%
○ infected syringes	68.2%	36.5%
○ mother to child	22.4%	16.1%
▪ HIV can be prevented by		
○ condoms	94.1%	62.7%
○ clean syringes	37.6%	25.6%
▪ Perception of self risk	44.7%	37.8%
▪ Ever tested for HIV	51.2%	6.0%
▪ Aware of STIs	91.9%	61.9%
▪ Consistent condom use	68.6%	37.3%

3.5 HIV Prevalence

Of the 4,639 FSWs tested for HIV, one tested sero-positive.

Table 3.5a: HIV prevalence among FSWs in 12 cities of Pakistan, 2006-07

City	Tested	Positive
Karachi	403	None
Hyderabad	398	One
Sukkhur	400	None
Larkana	400	None
Multan	400	None
Faisalabad	400	None
Sargodha	400	None
Lahore	425	None
Gujranwala	400	None
Peshawar	423	None
Bannu	194	None
Quetta	398	None
Total	4,639	One

3.6 Summary

A comparison of results from Rounds 1 and 2 show an increase in the estimates of FSWs from 35,494 (R1: 2005-06) to 45,450 (R2: 2006-07), and spot estimates 4,054 (R1) 6,685 (R2). The increased number of FSWs in this round does not necessarily mean an expansion of the sex industry, but can be attributed to an improvement in the mapping technique and experience of the staff in conducting mapping. The increase in the estimates, especially for the *Kothikhana*-based FSWs, can also be due to the incorporation of Network Mapping in this surveillance round. However, due to the extremely hidden nature of this group, there is a strong possibility that the estimates provided for *Kothikhana* and home-based FSWs are under reported, and the true estimates might be higher. Nonetheless it is important to note that in comparing surveillance rounds, the number of FSWs per spot has reduced from 8.7 to 6.5, which indicates a wider spreading out of sex work all over Pakistan (Figure 3.5a). This is important for SDPs working with FSWs, as greater spread makes it more difficult to reach this group and provide services.

Figure 3.5a: Average number of FSW per spot over time

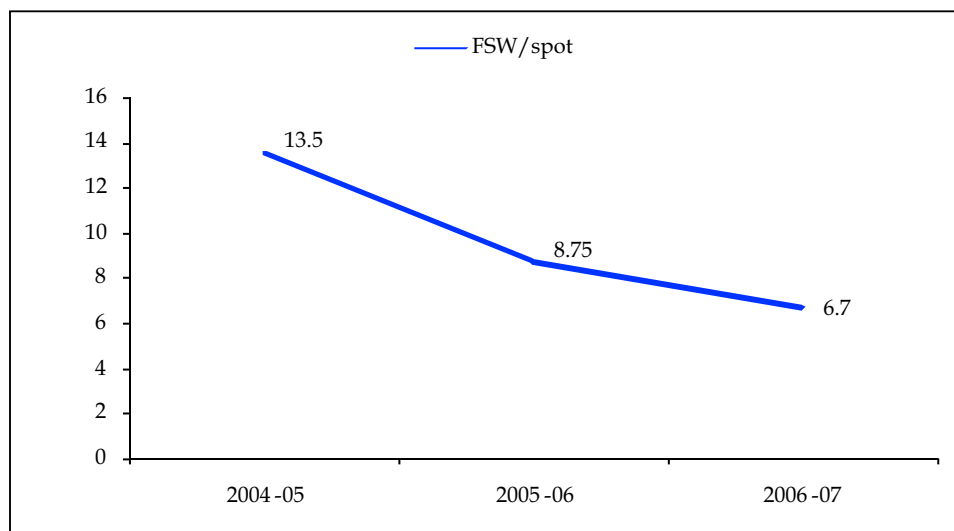
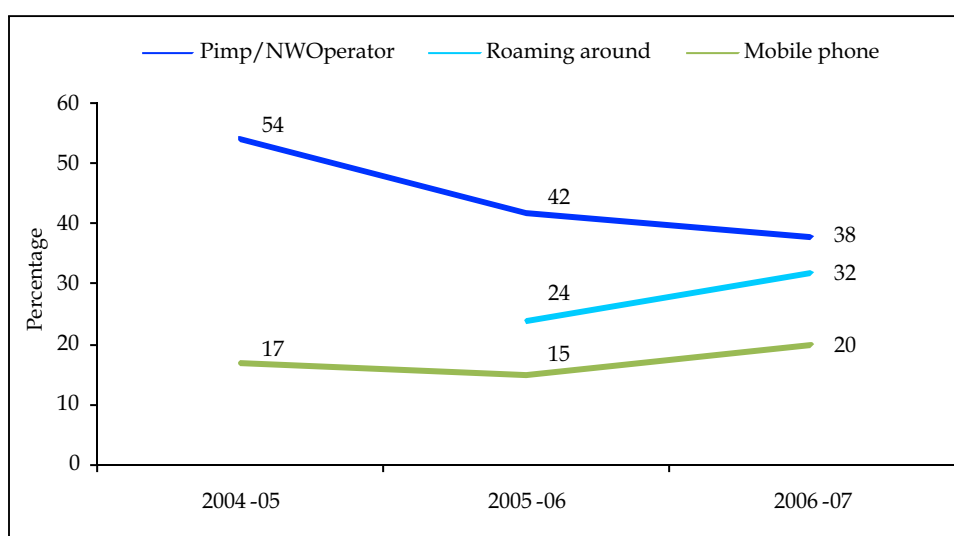


Figure 3.5b: Source of clients for FSWs in Pakistan over time



In addition to a reduced number of FSWs per spot, there are indications that FSWs are now seeking clients more independently, and the involvement of network operators is diminishing. Data is suggestive that the use of mobile phones has increased and is becoming a widely practiced method to directly contact clients. This is particularly true for the new FSW sub-type of call-girls, accessed for the first time during Round 2 (Figure 3.5b).

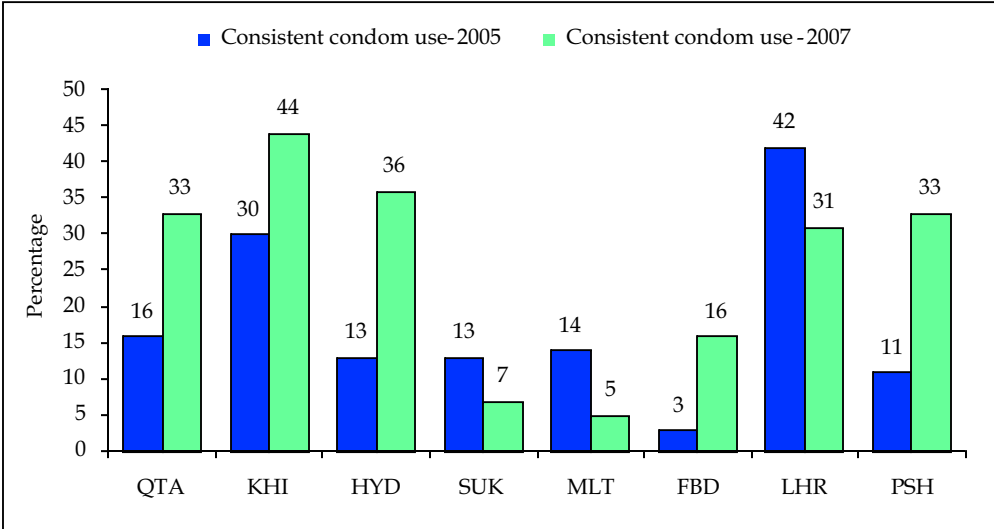
Although call-girls/other were found to be the youngest sub-type, brothel based FSWs started sex work at

younger ages and remain associated with it for longer periods of time (7.9 years) in comparison to all other typologies; a finding that remains unchanged over surveillance rounds. Nearly 60% of FSWs reported to have received no formal education, with illiteracy more commonly reported by FSWs in brothel and street-based work. This finding should be utilized in designing services and prevention messages for this group.

Nearly one fourth of the FSWs reported to have migrated from another city. This trend was particularly observed in the provincial capitals (i.e., Karachi, Lahore, Quetta and Peshawar), where FSWs were reported to have migrated from smaller cities within the province, as well as from other provinces. In Peshawar and Quetta, cross border migration, particularly from Afghanistan, was also reported. However, based on our data, these migratory patterns might not be specifically related to sex work, but rather describe an overall migratory pattern of this population, which in itself can have serious implications on the spread of the virus.

The average number of clients per day, as well as the average over the last month, did not change significantly between Rounds 1 and 2. Although a slight increase in client volume was noticed for Karachi, Peshawar, Hyderabad and Faisalabad, client volume during the last month was distributed evenly across all age groups and showed no specific trend.

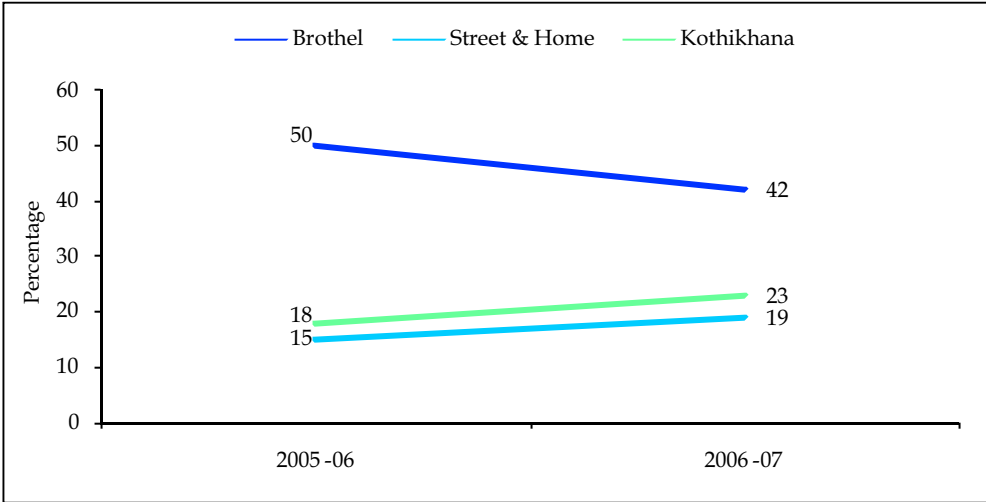
Figure 3.5c: Consistent condom use among FSWs by selected cities over time



Consistent condom use, which is the corner stone of all HIV prevention efforts, showed a slight improvement, but the situation is still far from desirable. Condom use with clients over the past month continued to be low, but overall, a slight increasing trend was seen, particularly in cities where SDPs are functional (i.e., Karachi, Quetta, Hyderabad and Peshawar) (Figure 3.5c). Interestingly, brothel-based FSWs reported a slight decrease in consistent condom use with clients, as compared to reports in Round 1.

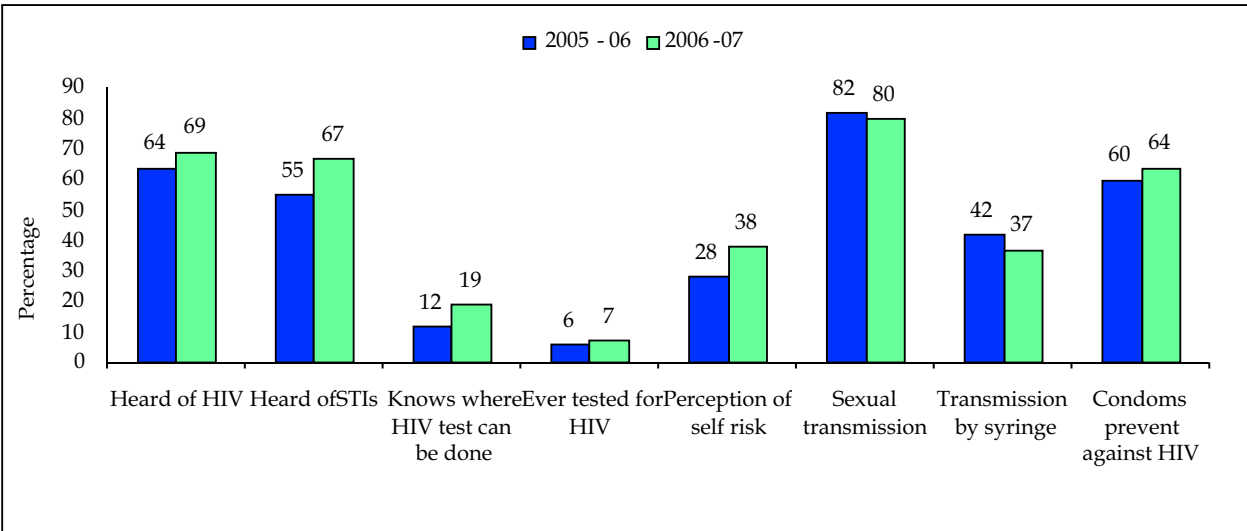
Consistent with a lower self reported condom use, brothel-based FSWs were also less likely to be carrying a condom at the time of this survey, as compared to 2005-06 (Figure 3.5d).

Figure 3.5d: Consistent condom among FSWs by typology over time



Condom use during anal sex, as compared to vaginal sex, remained unchanged and significantly low among all sub-types of FSWs. Anal sex has a much higher transmission probability in comparison to vaginal sex, and low rates of condom use for anal sex should be considered carefully for program planning.

Figure 3.5e: Changes in knowledge regarding HIV and STIs among FSWs over time



Over the two rounds, it was noted that knowledge of HIV and STIs and available services, have increased, but precise knowledge regarding modes of transmission and preventive measures showed no notable change (Figure 3.5e). Hence, a need for more comprehensive messages about HIV transmission and prevention is emphasized.

Over the same period, although SDPs have been developed and implemented in various cities where surveillance data was collected, only a negligible fraction of FSWs were aware of such services. Even FSWs who knew of the services, showed a reluctance to participate in such activities on a regular basis. However, utilization of these services by the target population does appear to result in improved knowledge and corresponding practices. For FSWs who had been utilizing a SDP, there were significant differences seen in their knowledge and awareness level as compared to those FSWs who had not been in contact with SDPs.

It should be recognized that programs and interventions will only be effective if they reach a critical mass of people who need them. There is an urgent need to identify the reasons for non-utilization and non-compliance, and look at ways to scale up interventions and improve coverage.

4. INJECTING DRUG USERS

4.1 Geographic Distribution and Estimates

Mapping estimates indicate that IDUs are the second largest HRG in the 12 cities selected for surveillance, with an overall estimate of 31,000, spread over 4,261 spots, and accounting for 27% of all HRGs. The highest number of IDUs (9,000) was found in Karachi at 808 spots. This was followed by Faisalabad, with 8,030 IDUs at 1,060 spots. Lahore, Gujranwala and Hyderabad also reported high estimates.

Hyderabad had the highest estimated number of IDUs per spot (12), followed by Karachi and Sargodha (11 IDUs per spot for each city). City wide estimates are provided in Table 4.1a, while distribution patterns are provided in Figures 4.1a to 4.1d.

Table 4.1a: City wise estimated number of IDUs in Pakistan, 2006-07

City	# of Spots	Minimum	Maximum	Average	Avg no. of IDUs/spots
Lahore	721	2,800	3,900	3,350	5
Multan	294	700	1,100	900	3
Sargodha	216	2,100	2,800	2,450	11
Gujranwala	489	2,300	3,000	2,650	5
Faisalabad	1,060	6,996	9,063	8,030	8
Karachi	808	7,200	10,400	9,000	11
Hyderabad	222	2,200	3,000	2,600	12
Sukkhur	174	1,200	1,500	1,350	8
Larkana	93	700	900	800	9
Peshawar	34	100	200	150	4
Bannu	60	100	150	125	2
Quetta	28	100	200	150	5
TOTAL	4,199	26,496	36,213	31,555	7

Fig 4.1a: Distribution of IDUs in Karachi, 2006-07

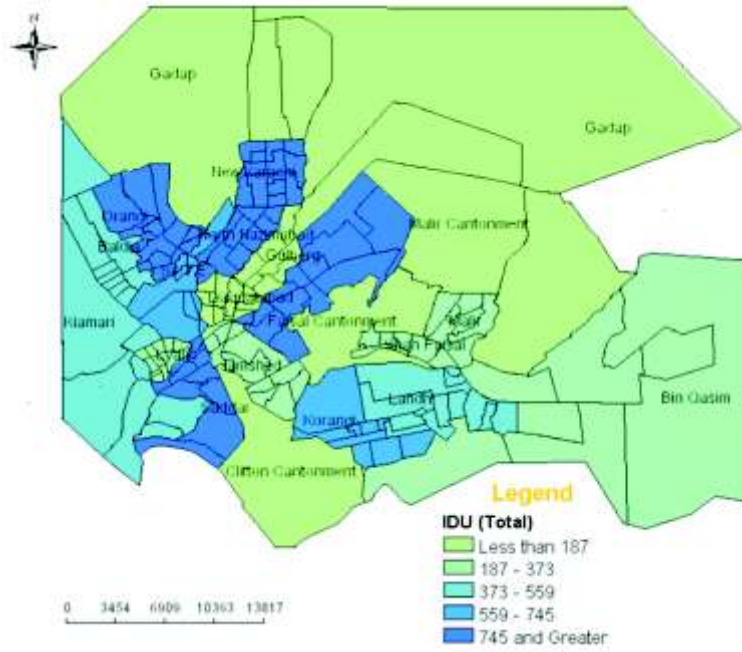


Fig 4.1b: Distribution of IDUs in Lahore, 2006-07

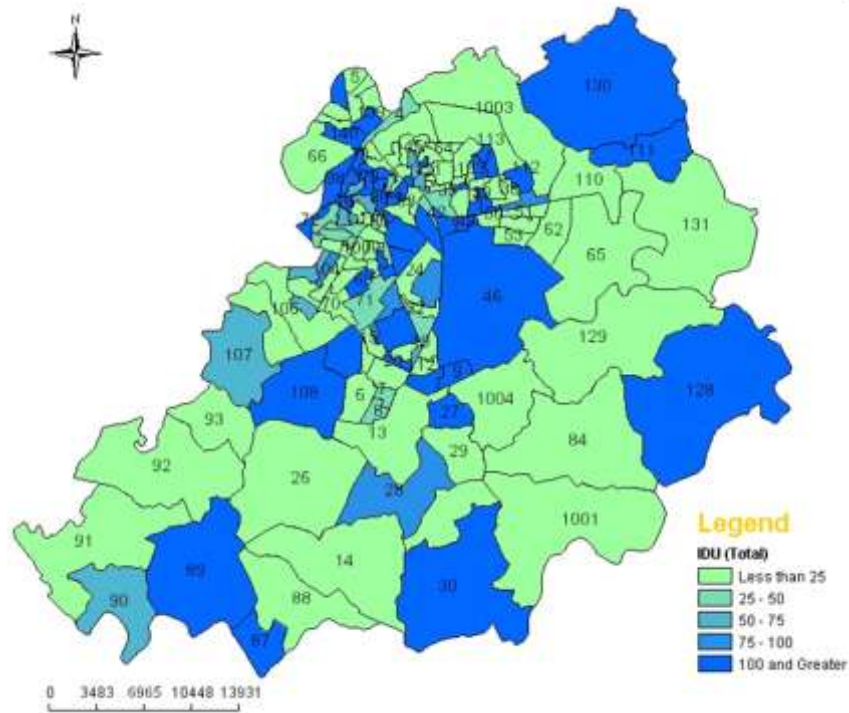


Fig 4.1c: Distribution of IDUs in Peshawar, 2006-07

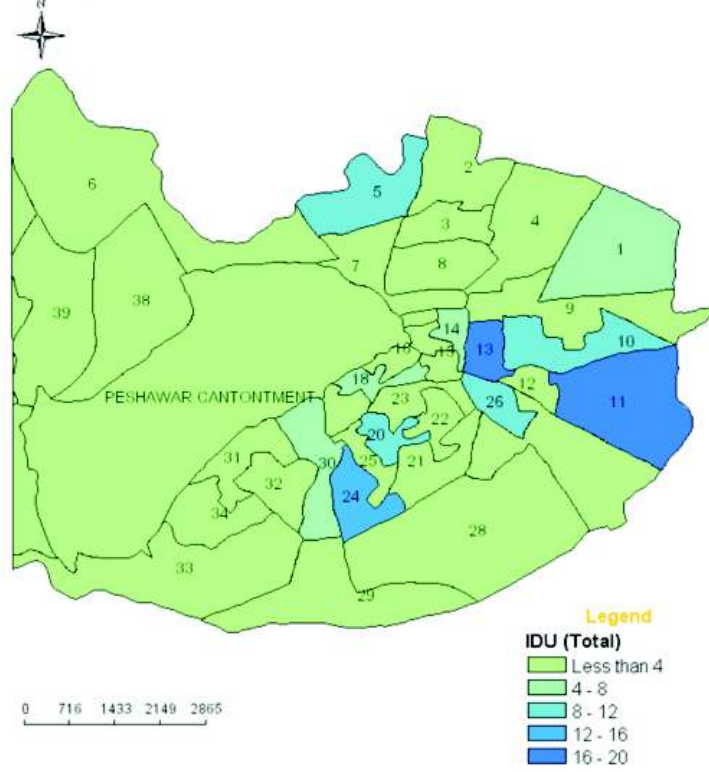
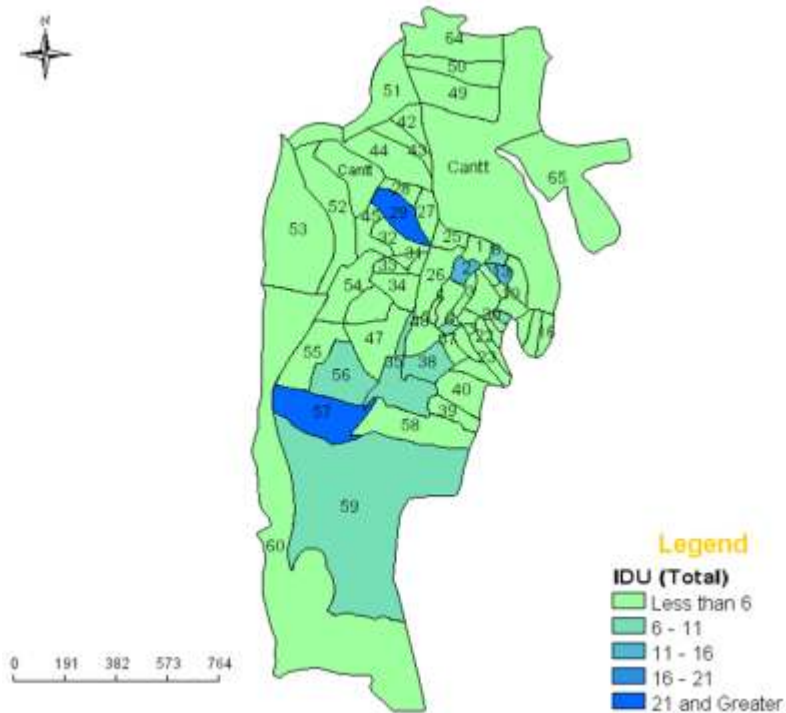


Fig 4.1d: Distribution of IDUs in Quetta, 2006-07



4.2 Socio-Demographic Characteristics

This section describes the key socio-demographic characteristics of 4,039 IDUs surveyed in 12 cities of Pakistan.

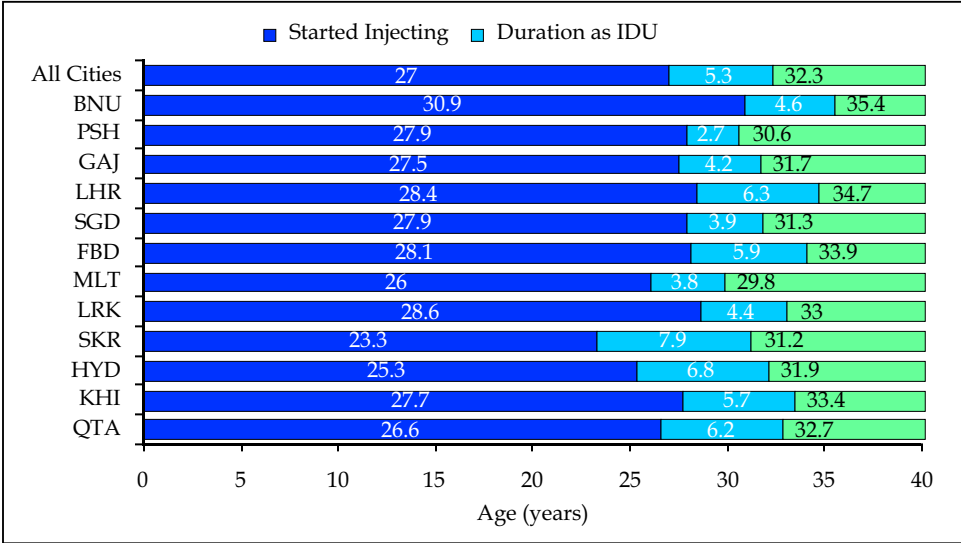
Table 4.2a: Socio-demographic characteristics of IDUs, 2006-07

Characteristics	IDUs (n=4,039)
Age	
▪ Up to 24 years	15.5%
▪ 25-29 years	23.7%
▪ 30-34 years	18.5%
▪ 35-40 years	26.6%
▪ More than 40 years	15.3%
—	32.3 ± 7.6 (32)
Marital status	
▪ Unmarried	50.84%
▪ Married	45.24%
▪ Separated / divorced	2.38%
▪ Widowed	1.54%
Years of education	
▪ Illiterate	56.7%
▪ Up to 05 yrs	23.1%
▪ 06 to 10 yrs	17.5%
▪ > 10 yrs	0.3%
Migrated from another city	16.89%
Living with	
▪ Lives alone	14.09%
▪ Family	64.34%
▪ Friends	21.0%
Current living arrangement	
▪ Home	65.4%
▪ Street	17.9%
▪ Hotel/hostel	14.3%
▪ Other	2.2%
Median income/month(PKR)	3,000

The average age of IDUs was 32.3 years ± 7.6 (Median = 32), with approximately 40% of the IDUs less than 30 years of age. The highest proportion of IDUs was aged 35-40 years (27%), and only 15% of IDUs were less than 25 years of age (see Table 4.2a). IDUs in Bannu and Lahore were the oldest (mean = 35.4 and 34.7 years respectively), whereas those in Multan (mean age = 29.8 years) were the youngest.

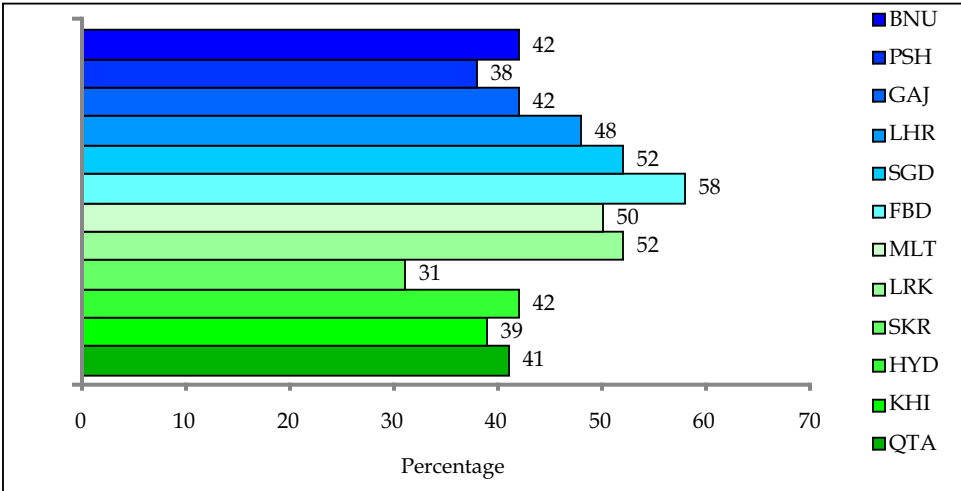
On an average, IDUs started injecting drugs at the age of 27 years, and had been injecting for a period of about 5.3 years at the time of the survey. IDUs in Sukkhur were injecting for the longest duration (7.9 years), while those in Peshawar had been injecting for the shortest duration (2.7 years) (Figure 4.2a).

Figure 4.2a: Mean age of injection drug use initiation, duration of use and current age of IDUs by city, 2006-07



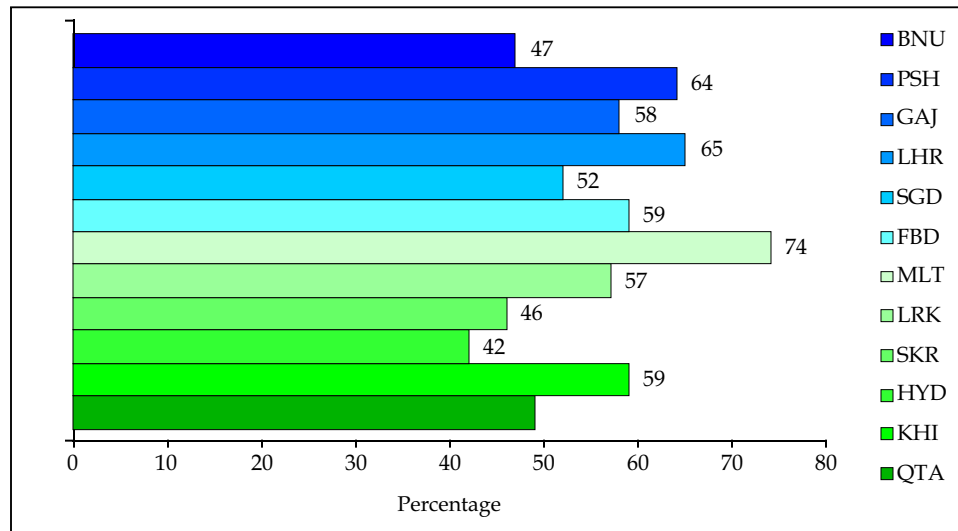
Approximately 45% of the IDUs surveyed were currently married. The highest proportions of married IDUs were seen in Faisalabad (58%), while in Sukkhur, 31% were married (Figure 4.2b). A significant proportion of IDUs were natives (83.1%), and nearly two thirds lived at home with their families. Among those who migrated, further analysis showed that Lahore had the highest proportion of in-migration (33%), followed by Karachi (14.1%) and Hyderabad (12.2%).

Figure 4.2b: Marital status of IDUs by city, 2006-07



Illiteracy was highest in Multan (74.3%), followed by Lahore (64.8%) and Peshawar (63.9%) (Figure 4.2c). The median monthly income was PKR3,000 or 50 USD per month (Mean PKR3,433 \pm 2,232).

Figure 4.2c: Illiteracy among IDUs by city, 2006-07



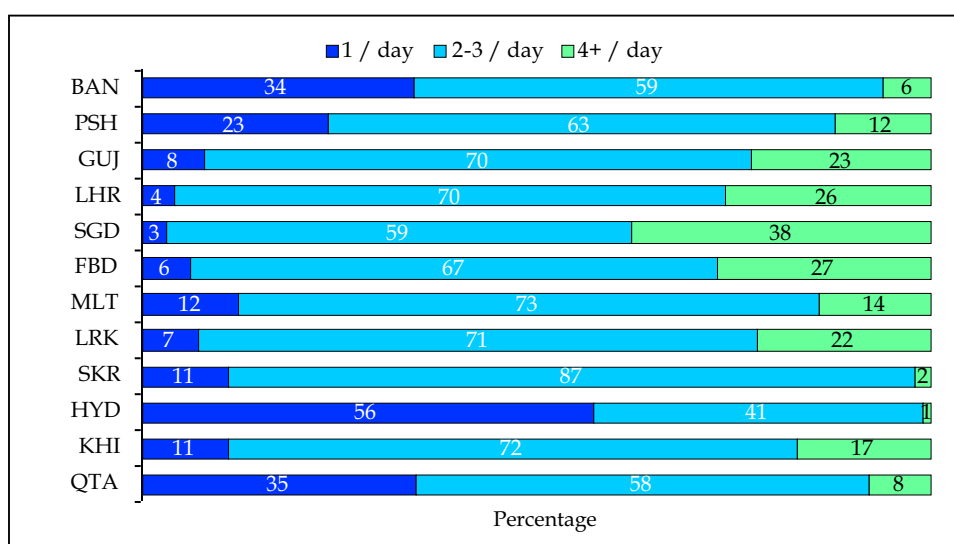
4.3 Drug Injecting Practices

The average number of injections per day was 2.2 ± 1.7 (median = 2). Although the average number of injections did not differ by age group, there were significant differences between cities (Table 4.3a). IDUs in Larkana reported the maximum number of daily injections (3.5 ± 2.1), followed by Sargodha (2.8 ± 1.6). Fifteen percent of IDUs reported injecting once a day within the last six months; 67% injected at least twice a day; and 18% injected more than three times a day. There were substantial differences between cities in the proportion of IDUs who injected frequently (Figure 4.3a).

Table 4.3a: Average number of injections per day by city, 2006-07

City	Average	Std. Dev
Bannu	1.4	1.3
Faisalabad	2.6	1.1
Gujranwala	2.7	1.5
Hyderabad	1.5	1.0
Karachi	1.8	1.4
Larkana	3.5	2.1
Lahore	2.7	2.1
Multan	0.5	0.9
Peshawar	1.8	1.2
Quetta	1.5	0.8
Sargodha	2.8	1.6
Sukkhur	2.2	0.7
Total	2.2	1.7

Figure 4.3a: Number of injections per day in past one month by city, 2006-07



Avil was reported to be the most commonly used drug by more than 50% of IDUs in all the cities (Table 4.3b). Further analysis revealed that IDUs in both Larkana and Sargodha reported significantly higher use of heroin during the past month, in comparison to other cities.

Table 4.3b: Types of drugs injected in past one month by IDUs by city, 2006-07 (in percentages)

Drug	KHI	HYD	SKR	LRK	MLT	FBD	SGD	LHR	GJR	PSH	BAN	QTA
Avil	89	94	88	97	73	83	59	85	96	95	44	56
Diazepam	15	29	63	1	30	66	10	70	80	3	47	12
Tamgesic	19	2	21	3	40	63	2	64	77	1	0	6
Heroin	76	72	24	96	3	18	81	14	2	16	21	76
Sosegon	3	12	10	1	11	1	1	5	2	15	82	12
Bupron	4	5	11	2	20	22	1	23	3	1	7	6
Pentazogon	7	2	1	0	6	1	0	5	2	1	22	2
Restoril	1	6	0	1	7	2	0	1	1	1	1	12
Pentonil	3	1	0	0	7	0	1	2	0	1	6	0
Phenergan	4	2	6	0	10	1	0	1	1	4	7	2
Marzine	0	5	0	0	1	1	0	1	1	0	0	1

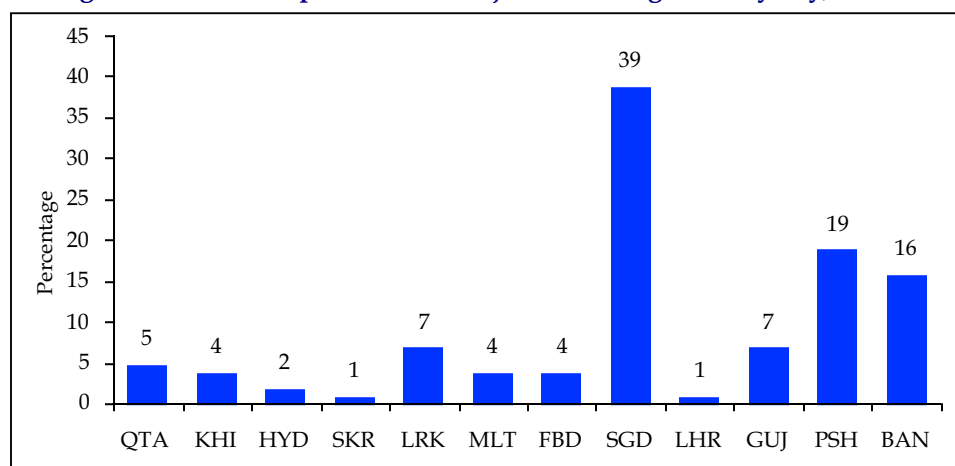
Nearly two-thirds of IDUs lived at home (65%) with their families (64%). However, only 13.7% reported that they last injected at home. Most IDUs reported that they injected most recently in open spaces/streets/parks and were accompanied by friends and acquaintances (64.1%) (Table 4.3c). Thirty-two percent of IDUs injected alone, 16.2% injected in Shrines and *darbars*, while 2.3% injected in company with other family members.

Table 4.3c: Injection practices of IDUs, 2006-07

Variable	IDUs (n=4,039)
Last time injected at	
▪ Park/street/open spaces	65.7%
▪ Home	13.9%
▪ Shrines/ <i>darbar</i>	16.2%
▪ Hotel/shop	3.5%
Last time injected with	
▪ Family member(s)	2.3%
▪ Friends + acquaintances	64.1%
▪ Strangers	1.3%
▪ Alone	32.0%
Injected by "professional" injectors	
▪ Always	3.6%
▪ Most of the time	4.7%
▪ Sometimes	17.5%
▪ Never	72.9%
Used a new syringe for injecting	
▪ Always used a new syringe	41%
▪ Never	5.3%

Receiving injections by "professional" injectors/street doctors was generally uncommon, with almost 73% reporting that they never received an injection from such a source, and only 3.6% of IDUs relied exclusively on these professionals for injecting. Injection by "professional" injectors varied considerably by cities, with the highest proportion reported by IDUs in Sargodha (39%), followed by Peshawar (19%) and Bannu (16%) (Figure 4.3d).

Figure 4.3d: Use of "professional" injectors among IDUs by city, 2006-07



Approximately 41% of IDUs reported always using a new syringe in the past month, and only 5.3% reported that they never used a new needle/syringe. Age stratified analysis showed little variation in the use of clean needles/syringes by age, though somewhat higher proportions of IDUs in the younger and older age groups reported always using new needles/syringes in the past month (Figure 4.3e). Compared to other cities, Karachi had the highest proportion of IDUs (83%) who reported always using a new syringe/needle for injecting; IDUs in Sukkhor reported the lowest levels for this (9%) (Figure 4.3f).

Figure 4.3e: Proportions of IDUs always using a new syringe for injecting by age, 2006-07

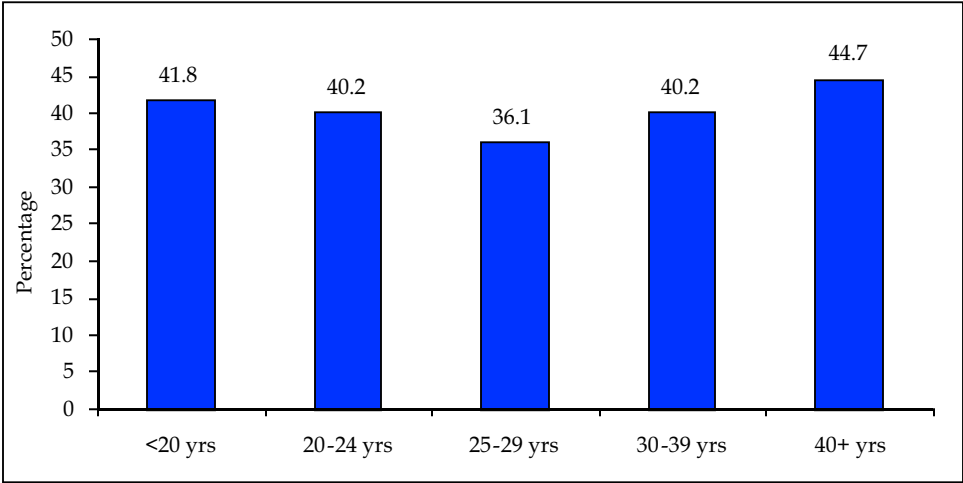
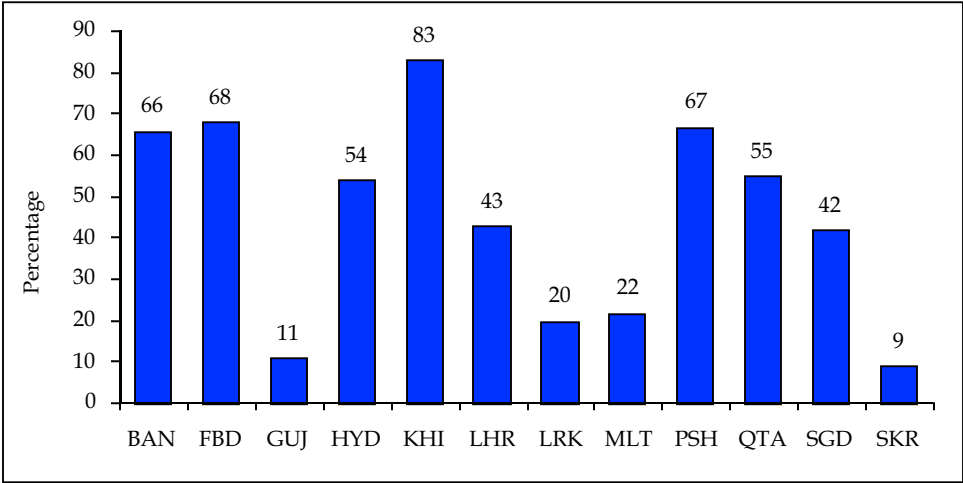


Figure 4.3f: Proportion of IDUs always using a new syringe for injecting by city, 2006-07



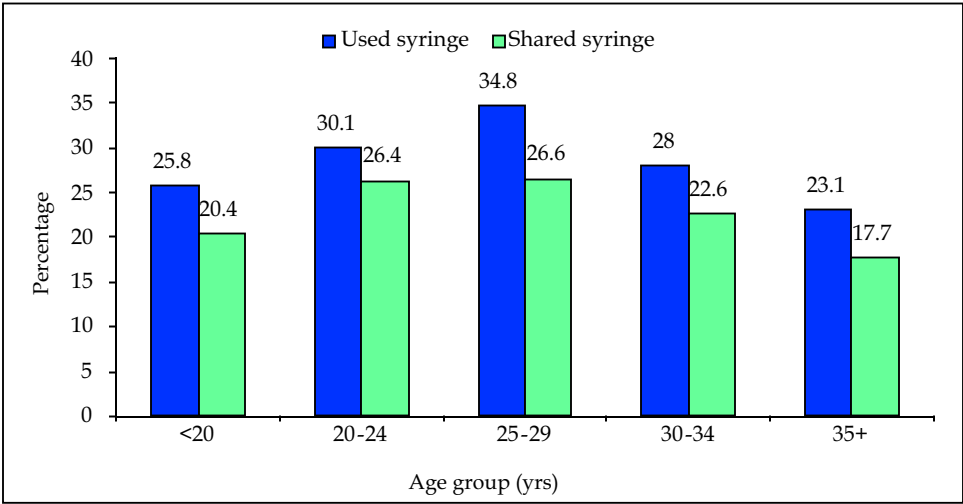
Further analysis showed that 27.8% of the IDUs reported injecting with a used needle on their last injection. Approximately, 22% of IDUs shared a needle that was used by another drug user; 8% reported sharing paraphernalia with another drug user on their most recent injection (Table 4.3d). About 4% of IDUs reported that they shared the same needle with another IDU, and 19% reported sharing with two or more IDUs

(Table.4.3d). IDUs aged 25-29 were most likely to inject with a used needle/syringe or share one that they had used (Figure. 4.3g).

Table 4.3d: Injection practices on last injection among IDUs

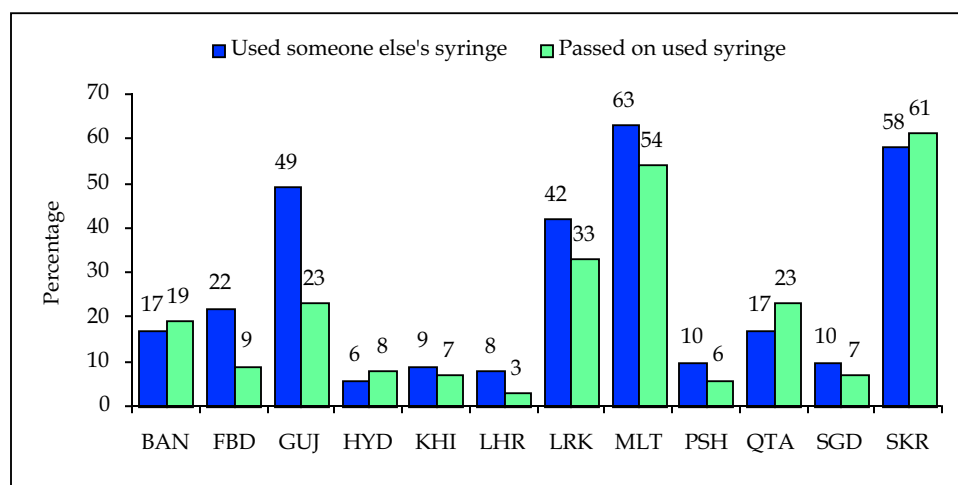
Variables	IDUs (n=4,039)
Injected with a used needle	27.8%
Shared a used needle/syringe	21.9%
Shared injection paraphernalia	7.9%
Number of IDUs sharing same needle	
▪ None	71.5%
▪ One	3.8%
▪ Two	9.2%
▪ more than two	9.6%

Figure 4.3g: Proportion of IDUs who use a used syringe or shared syringe for injecting by age groups, 2006-07



Sharing of syringes/needles for the most recent injection varied considerably between cities (Figure. 4.3h). IDUs in Sukkhur, Multan, Larkana and Gujranwala reported the highest levels of injecting with a used (by another IDU) needle or syringe. Likewise, higher proportions of IDUs in Sukkhur, Multan, Gujranwala, Quetta and Lahore reported of sharing their used syringe/needle with other IDUs for injecting (Figure. 4.3h).

Figure 4.3h: Proportion of IDUs sharing syringes/needles on last injection by city, 2006-07



4.4 Sexual Behaviors and Practices

Approximately 84% of IDUs had ever been sexually active. The average age at first sexual encounter was reported to be 18.1 years \pm 3.6. Approximately 46% of IDUs reported sexual activity with a regular female partner in the past six months; however, condom use with regular sex partners during the last sexual encounter was very low (16.5%). Consistent with this finding, only 10% reported that a condom was always used during sexual intercourse with regular sex partners.

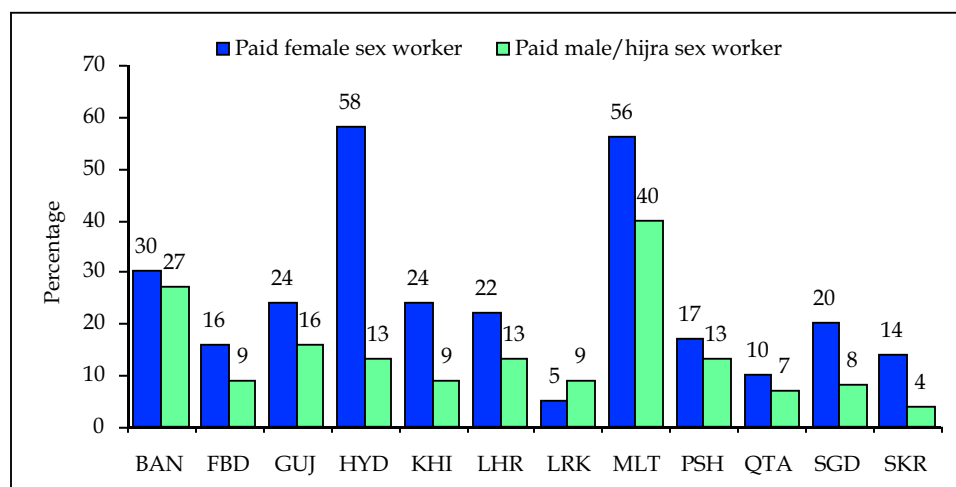
Twenty-seven percent of IDUs reported paying a FSW for sexual intercourse in the past six months; of these, only 21% used condoms during these commercial sex transactions. Thirteen percent of IDUs paid a MSW or HSW for sex in the last six months. Among those, condom use was reported in only 13% of transactions. Fifty-four percent of those who had anal sex with a MSW or HSW reported using some sort of a lubricant. About 20% of IDUs exchanged sex for drugs or money in the past six months (Table 4.4a).

Table 4.4a: Selected sexual behavior patterns among IDUs, 2006-07

Practice / Behavior	IDUs (n=4,039)
Age of first sexual intercourse	18.1 ± 3.6
Never had sex	16.2%
Regular female sex partner (last 6 months)	
▪ Sexually active with regular female sex partner	45.7%
▪ Condom use at last sex	16.5%
▪ Always used a condom with regular partner	9.9%
▪ Never used a condom with regular partner	40.7%
Had sex with a FSW (last 6 months)	26.6%
▪ Mean number of paid female partners (past 6 months)	3.6 ± 4.5
▪ Condom use in last sex with paid female sexual partner	20.9%
Had sex with a MSW or HSW (last 6 months)	13.2%
▪ Condom used in last sex with MSW or HSW	12.9%
▪ Lubricant use in last sex with MSW or HSW	54.2%
Exchanged sex for drugs or money (last 6 months)	19.6%

There was a substantial difference between cities in the proportion of IDUs who reported paying for sex (Figure. 4.4a). IDUs in Multan and Bannu reported paying FSWs, MSWs or HSWs for sex more frequently. Specifically, a high proportion of IDUs in Hyderabad and Multan reported paying female sex workers.

Figure 4.4a: Proportion of IDUs reporting paying for sex in the past six months by city, 2006-07 (%)



4.5 HIV Related Knowledge, Program Exposure and Utilization

Approximately 74% of all IDUs interviewed had heard of HIV/AIDS. Of those, 58% believed that a healthy looking person can have HIV/AIDS, and 31% believed they are at a risk of acquiring HIV.

Knowledge of sexual intercourse as a mode of HIV transmission was relatively high (72%), and 68% knew that HIV can be transmitted by sharp instruments/needles/syringes. Knowledge of HIV transmission by blood transfusion was reported to be 11% (Table.4.5a).

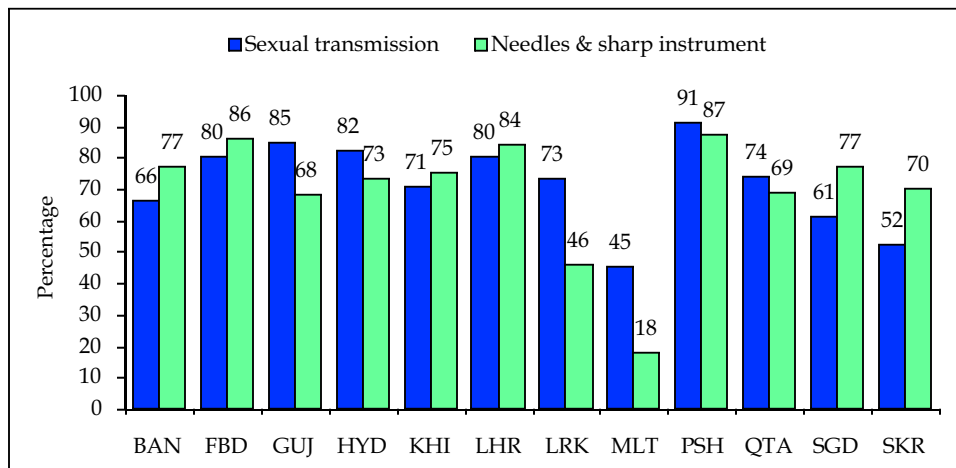
Table 4.5a: HIV related knowledge and program participation among IDUs, 2006-07

Knowledge Area	IDUs (n=4,039)
Ever heard of HIV and/or AIDS	74.0%
Healthy looking person can have HIV/AIDS*	58.1%
HIV transmitted by sexual intercourse*	71.9%
HIV transmitted by sharp instruments/needles and syringes*	67.7%
HIV transmitted by blood transfusion*	11.1%
Condoms can prevent HIV transmission*	44.3%
Sexual abstinence to prevent HIV transmission*	57.4%
Clean syringes/needles to prevent HIV transmission*	53.9%
Self perception of risk for HIV*	31.1%
Know where to receive HIV test*	11.6%
Have been tested for HIV*	6.1%
Knows test results*	2.2%
Awareness of STIs	55.3%
Self-reported STI in past 6 months*	10.4%
Received treatment for reported STI*	62.5%
Ever heard of HIV prevention programs	30.6%
Participated in HIV programs	15.6%
Arrested in the past 6 months	22.2%
Violence or other forced for sex in past 6 months	4.8%

*Valid percentages (i.e., of those of "ever heard of HIV and/or AIDS")

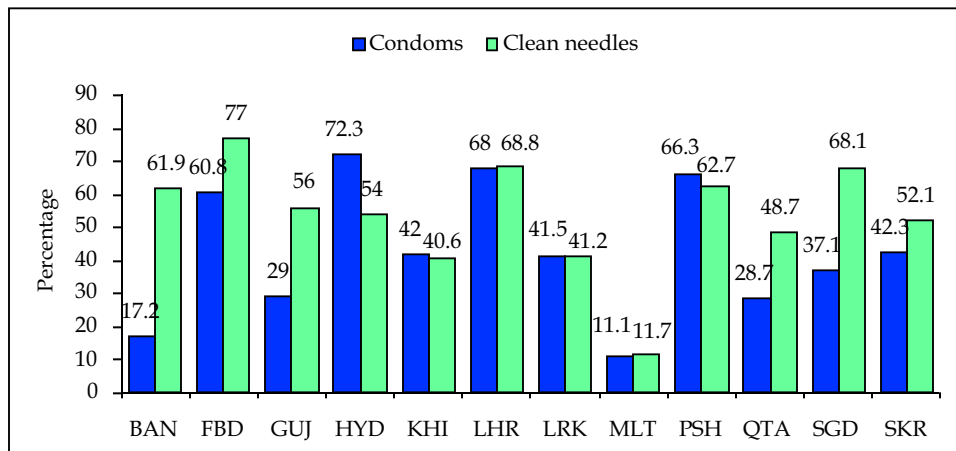
More than half of IDUs knew that using clean syringes and needles can protect against HIV. Forty-four percent reported condom use as a way to prevent HIV, and 57.4% believed that abstinence from sex can prevent HIV infection. City wise analysis showed that less than 50% of IDUs interviewed in Multan and Larkana knew that HIV is transmitted by sharp instruments and needles. Similarly, less than 50% IDUs in Multan knew that HIV could be transmitted sexually (Figure. 4.5a).

Fig 4.5a: Knowledge of modes of HIV transmission among IDUs by city, 2006-07



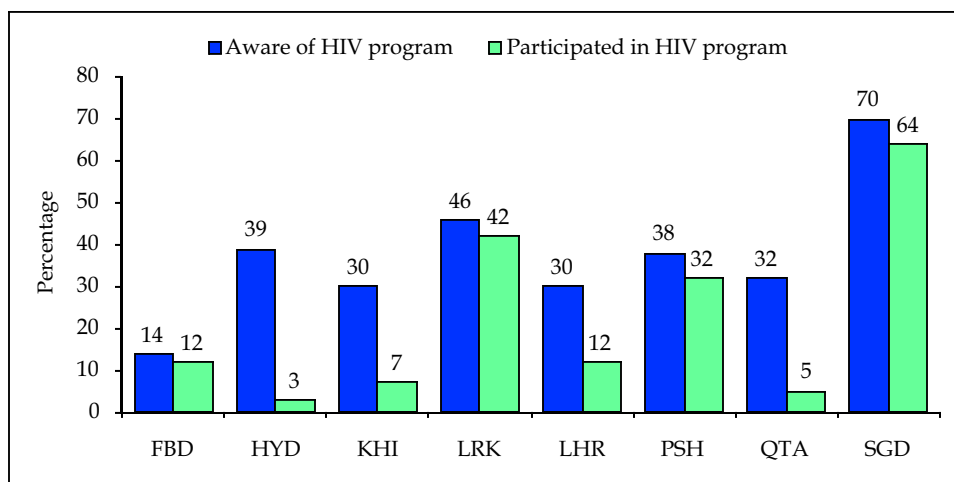
Further analysis showed that less than 40% of IDUs in Bannu, Gujranwala, Larkana, Multan, Quetta and Sargodha knew that condoms can protect against HIV/AIDS. In addition, less than half of the IDUs in Larkana, Karachi, Multan and Quetta knew that using clean needles can prevent transmission of HIV/AIDS (Figure. 4.5b).

Figure 4.5b: Knowledge of HIV preventive measures among IDUs by cities, 2006-07



Knowledge and utilization of SDPs was fairly low. Thirty-one percent of all IDUs knew about the HIV prevention programs in their respective cities, but only half of those who knew about these programs reported ever participating in them. Knowledge and participation in HIV prevention programs was highest in Sargodha, Larkana and Peshawar (Figure. 4.5c). Only 11.6% of the IDUs knew a place where they could be tested for HIV, while only 6% had been ever tested; 2.2% of those who had been tested knew the test results (Table.4.5a).

Figure 4.5c: Knowledge and participation in SDPs among IDUs by selected cities, 2006-07



Overall, about 5% of IDUs reported that they had been subject to violence in the past six months, and IDUs in Multan reported violence more commonly than IDUs in other cities. Overall, approximately 22% of IDUs reported having been arrested in past six months, with reports of arrests being most common among IDUs in Hyderabad, Larkana and Bannu (Table.4.5a).

4.6 HIV Prevalence

The overall sero-prevalence of HIV among IDUs was 15.8% (95% CI: 14.7, 16.9), with high variability between cities. The highest prevalence was in Sargodha (51.3%), followed by Karachi (30.1%). HIV prevalence was less than 5% in Gujranwala and Bannu, while no IDUs in Multan tested positive for HIV. Table 4.6b shows the HIV prevalence among IDUs by selected socio-demographic and behavioral characteristics.

Table 4.6a: HIV prevalence among IDUs by city, 2006-07

City	Prevalence (95% CI)	Tested	Positive
Karachi	30.1% (25.8, 34.8%)	399	120
Hyderabad	29.8% (25.5, 34.4%)	400	119
Sukkhur	5.3% (3.4, 7.9%)	399	21
Larkana	16.5% (13.2, 20.5%)	399	66
Multan	0.0	400	0
Faisalabad	13.3% (10.3, 16.9%)	400	53
Sargodha	51.3% (46.4, 56.1%)	400	205
Lahore	6.5% (4.5, 9.4%)	400	26
Gujranwala	1.0% (0.4, 2.5%)	400	04
Peshawar	2.2% (0.9, 5.6%)	180	04
Bannu	1.4% (0.3, 7.4%)	72	01
Quetta	9.5% (6.1, 14.5%)	190	18
Total	15.8	4039	637

Table 4.6b: A comparison of socio-demographic, injecting and sexual practices among HIV +ve/-ve IDUs, 2006-07

Variable	HIV (-ve)	HIV (+ve)
A) Socio-demographic status		
Age category*		
▪ 15-19 years	2.1%	3.3%
▪ 20-24 years	13.2%	14.9%
▪ 25-29 years	23.2%	26.7%
▪ 30-34 years	18.8%	17.4%
▪ > 35 years	42.7%	37.7%
Illiteracy	58.1%	49.9%
Current living arrangement*		
▪ Home	66.5%	60.4%
▪ Hostel/hotel	13.9%	16.8%
▪ Street	17.5%	20.3%
Living with whom		
▪ Alone	13.2%	18.8%
▪ With relatives/family	65.3%	59.3%
▪ With friends	21.1%	21.7%
B) Drug and injection practices		
Injected Heroin *	37.9%	69.2%
▪ Injecting > three times a day	85.6%	79.9%
▪ Injecting with a used syringe/needle	29.7%	17.4%
Shared syringe/needle on last time*	69.4%	83.4%
Injection by professional injector *	10.0%	24.0%
▪ Had sex with FSW	26.6%	26.8%
▪ Had sex with MSW/HSW	13.9%	9.7%

* Statistically significant P value < 0.05

The following graphs show the association between HIV prevalence and various behavioral characteristics of IDUs in the 12 cities. Generally, there was not a strong and consistent association observed between HIV prevalence and the type of drug used or self-reported injecting behaviors (Figures 4.6a to 4.6f). In some cities where overall HIV prevalence was lower, it appears that those positive cases which do exist, are more prevalent among those reporting heroin use. However, in Hyderabad and Sargodha, where HIV prevalence is particularly high, prevalence does not differ substantially between those who use heroin and those who don't. HIV prevalence also did not differ much according to injecting behavior such as daily frequency and reported use of a clean needle/syringe at last injection. A possible explanation for this is due to the relatively high risk of HIV acquisition per injection exposure, risk for HIV among IDUs is largely determined by the characteristics of the injecting networks and the behaviors of others in the networks. That is to say, if HIV prevalence is very high among others within a network, the risk for any given individual is also very high, even if they usually employ protective behaviors. In this regard, reducing individual risk also depends largely on broad-based behavior change within a network, and as shown previously, there is a high degree of needle sharing in IDU networks in all cities. More detailed analysis of HIV and its risk factors among IDU is required to better understand these and other transmission dynamics.

Figure 4.6a: Association of heroin use with HIV status, 2006-07

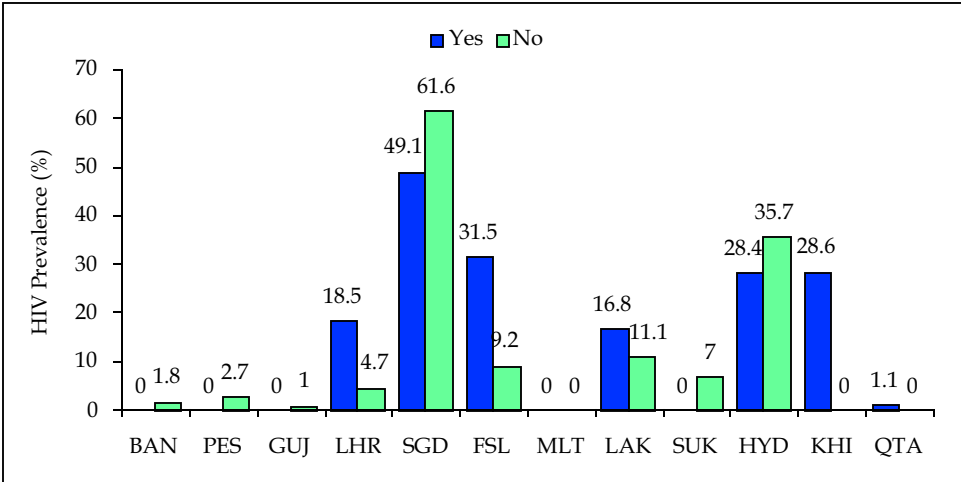


Figure 4.6b: Association of sharing with HIV status, 2006-07

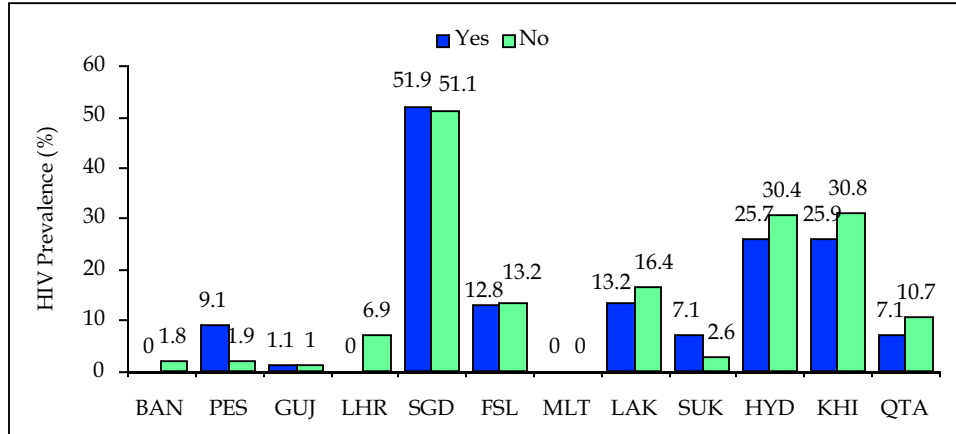


Figure 4.6c: Injected by professional injectors and HIV status, 2006-07

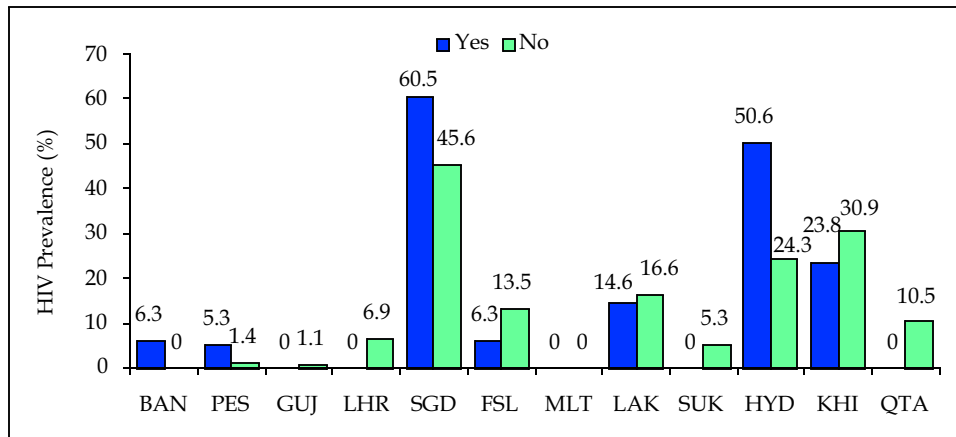


Figure 4.6d: Had sex with an FSW in the past 6 months, 2006-07

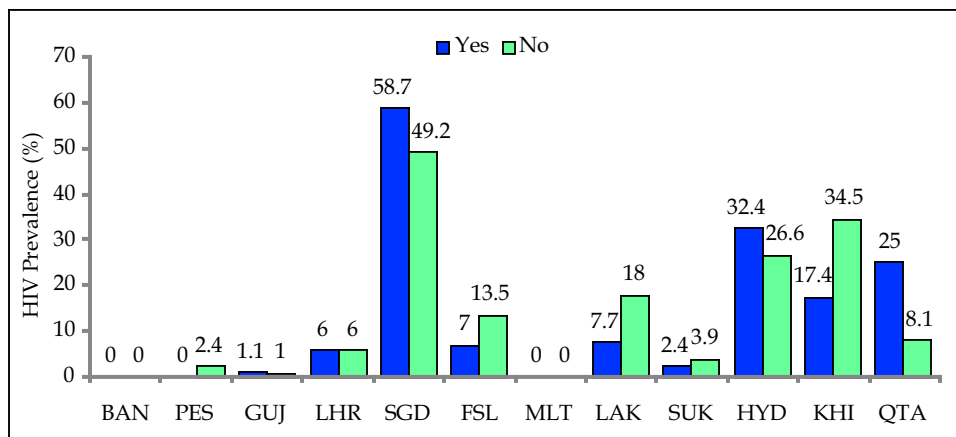


Figure 4.6e: Had sex with a MSW or HSW in the past 6 months, 2006-07

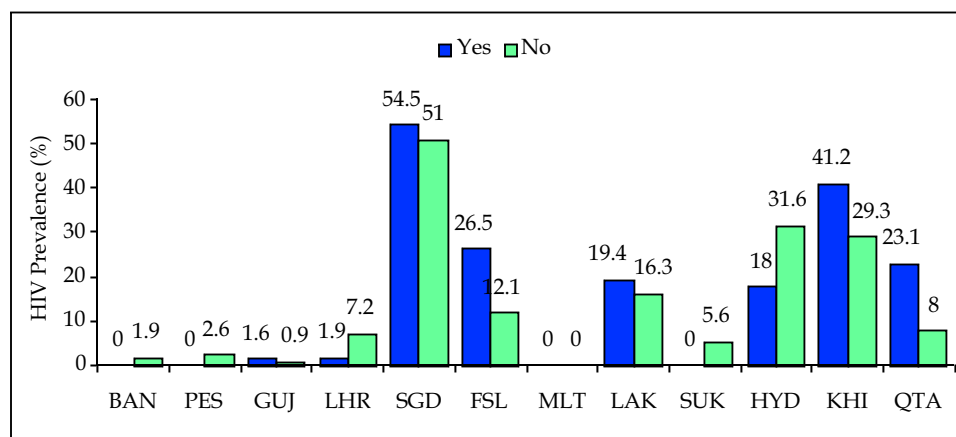
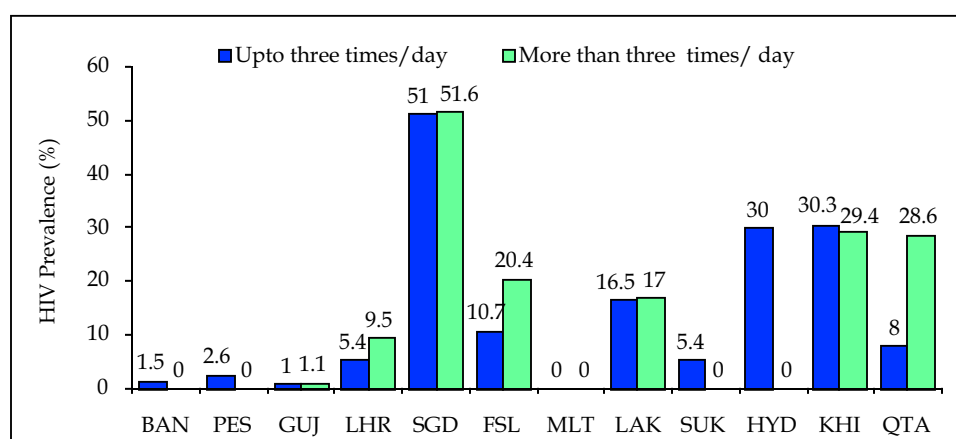


Figure 4.6f: Injected more than 3 times a day and HIV status, 2006-07



4.7 Summary

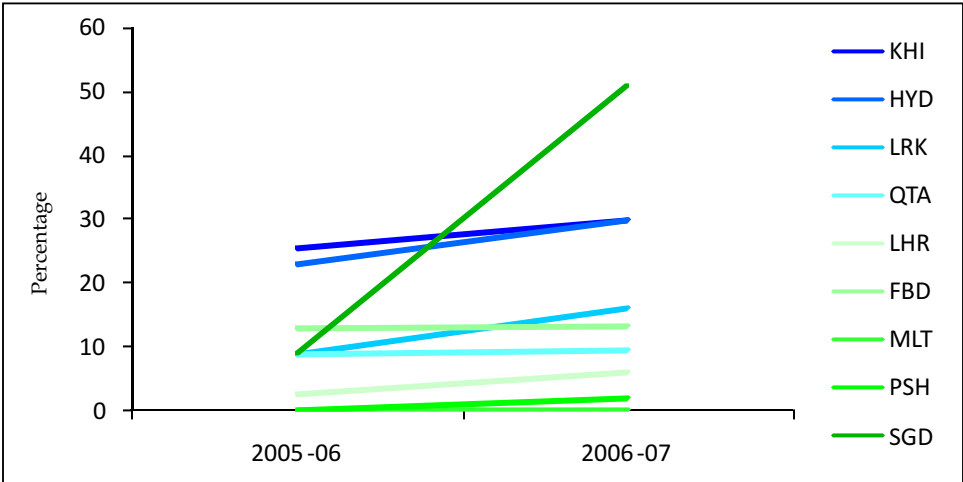
Overall estimates of IDUs ranged between 26,496 to 36,213 (avg. 31,555) spread over 4,199 spots, giving an average number of 7.6 IDUs per spot. The estimated number of IDUs increased in all cities except Karachi, Sukkhour and Peshawar. Although the reasons for these low numbers in Karachi and Peshawar are yet to be explored, the reduced numbers of IDUs in Sukkhour is primarily due to involvement of police in selected sites. The high IDU estimates for Hyderabad and Larkana can be explained due to a shift of IDUs from Sukkhour to these cities.

A comparison with results of Round 1 shows an alarming increase in the prevalence of HIV among IDUs in Pakistan. Sero-prevalence data clearly shows a concentrated epidemic among IDUs which is now

established in eight of the 12 cities where data were collected. The overall sero-prevalence was 15.8% (95% CI: 14.7, 16.9), which varies substantially between cities, however all cities show an upward trend. The highest prevalence was in Sargodha (51.3%), followed by Karachi (30.1%). (Fig 4.7a)

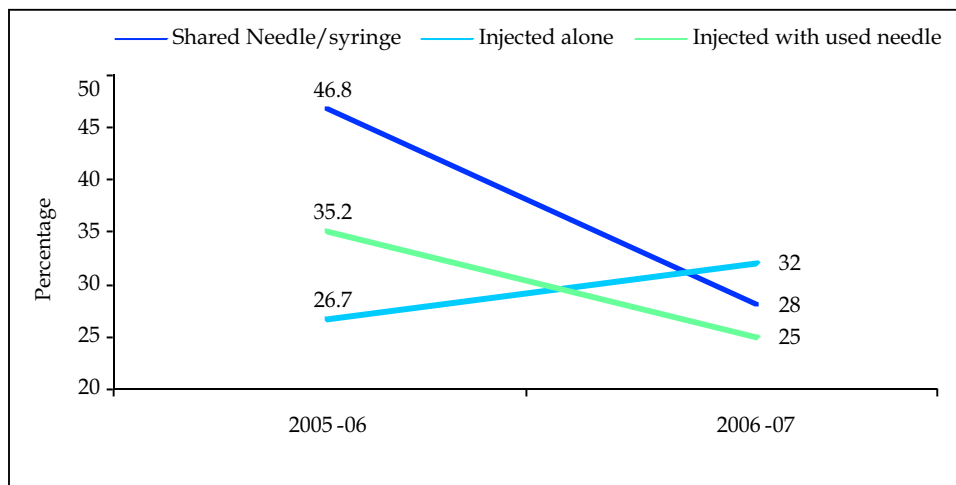
The epidemic is most established in Sindh, where all sampled cities show a concentrated epidemic. In Punjab, the concentration of the epidemic showed a patchy distribution, and three out of the five cities surveyed were affected. The epidemic has yet to establish footholds in NWFP as both Peshawar and Bannu had negligible numbers of infected IDUs. However, in comparison to last year, infection levels have increased from 0.5% to 2.2% in Peshawar. Prevalence has remained stable in Quetta.

Figure 4.7a: HIV prevalence trends among IDUs by selected cities over time



HIV is transmitted among IDUs primarily through the sharing of infected syringes and related injecting equipment, which includes paraphernalia, such as “cookers” (spoons or containers for dissolving the drug), “cottons” (filters), and wash-water used to rinse needles and syringes and dissolve drugs. Compared to the Round 1, there appears to be some trend towards injecting alone or avoiding needle sharing behaviors (Figure. 4.7b). However, this could also be due to better sampling of home-based IDUs in this round. Another encouraging trend observed during this second round, was the lower number of IDUs who reported seeking the assistance of professional injectors/street doctors for injecting, who roam around the city giving injections to different IDUs using the same syringe (Figure. 4.7c).

Figure 4.7b: Trends of injecting alone and needle sharing behaviors among IDUs over time



The sexual behaviors of IDUs have been reported to be riskier in this surveillance round compared to the previous one. The number of IDUs who bought sex from FSWs doubled over the last year (Figure. 4.7d). However, a higher proportion of IDUs reported using a condom for these encounters. No significant differences were seen in the sexual practices with MSWs and HSWs.

Figure 4.7c: Trends of seeking assistance from professional injectors/street docs by IDUs over time

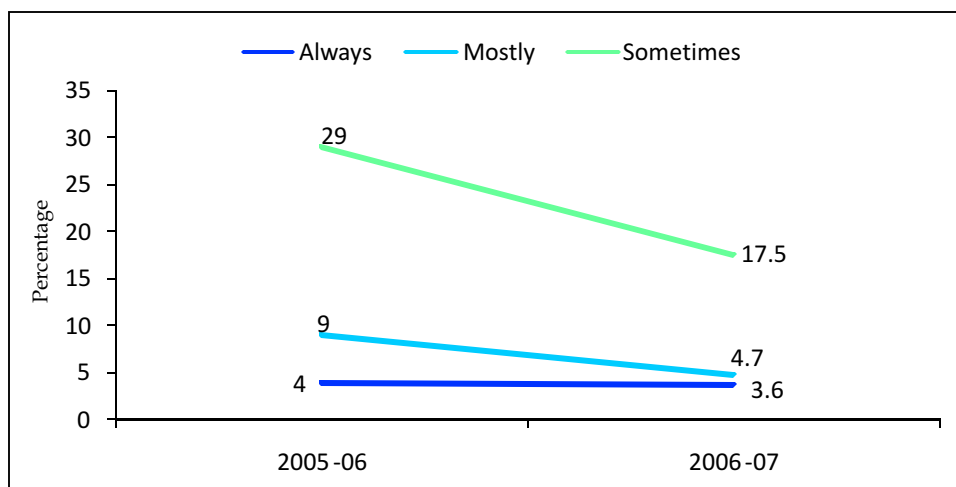
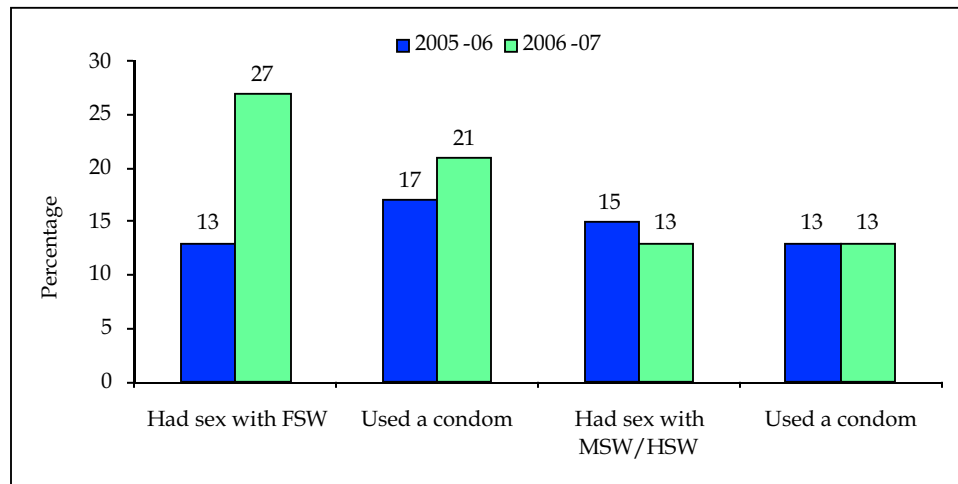
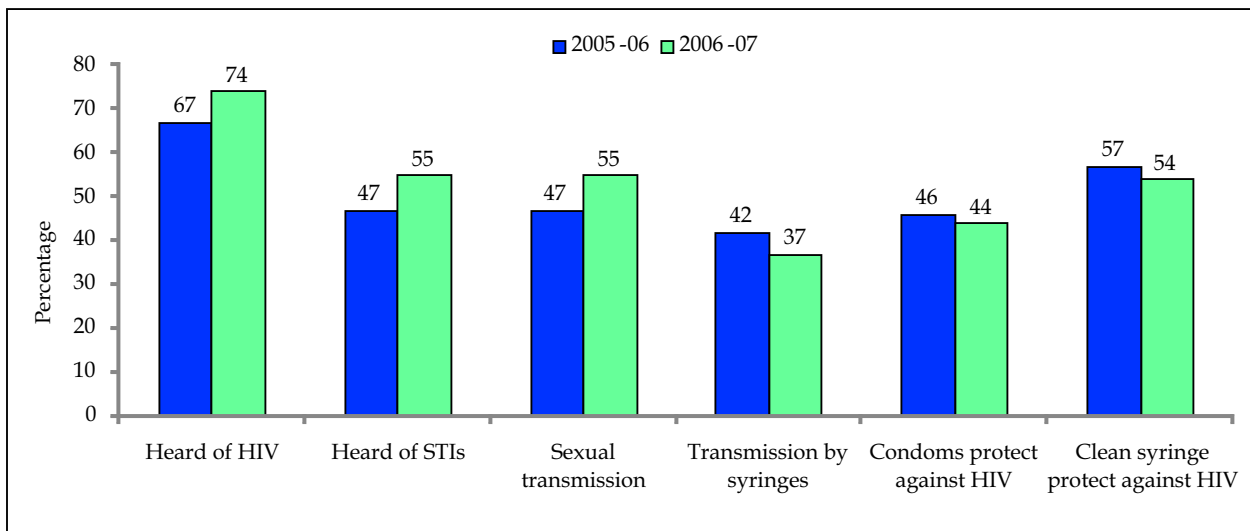


Figure 4.7d: Condom use in commercial sex transactions among IDUs over time



Over a period of two years, it has been noted that knowledge of HIV and STIs, and available services have increased, but the precise knowledge about modes of transmission and prevention showed a minor decline (Figure. 4.7e).

Figure 4.7e: Changes in knowledge regarding HIV and STI among IDUs over time



While nearly one third of the IDU SDPs have been developed and implemented in various cities where surveillance data were collected, only a negligible fraction of IDUs surveyed in those cities were aware of the programs. Even IDUs who knew of the services, showed a reluctance to participate in such activities on a regular basis, and only a half of those who knew of the programs were participating in them.

5. MALE & HIJRA SEX WORKERS

5.1 Geographic Distribution and Estimates

A total of 19,320 Male sex workers (MSWs) at 4,083 spots, and 14,725 Hijras sex workers (HSWs) at 2,848 spots, were estimated in the 12 cities, where Round 2 was conducted. City wise estimates are provided in Table 5.1a, while distribution patterns are provided in Figures 5.1a to 5.1h.

Table 5.1a: Estimated number of MSWs and HSWs by city, 2006-07

City	MSWs			HSWs		
	Average	# of Spots	No/Spot	Average	# of Spots	No/Spot
Lahore	1,550	357	4.3	2,600	585	4.4
Multan	1,750	614	2.9	750	196	3.8
Sargodha	1,050	153	6.9	600	109	5.5
Gujranwala	750	198	3.8	600	141	4.3
Faisalabad	4,045	1,015	4.0	1,400	351	4.0
Karachi	4,550	820	5.5	6,350	1,010	6.3
Hyderabad	1,350	174	7.8	1,100	166	6.6
Sukkhur	900	136	6.6	250	60	4.2
Larkana	900	82	11.0	600	117	5.1
Peshawar	1,000	174	5.7	100	21	4.8
Bannu	175	79	2.2	25	9	2.8
Quetta	1,300	281	4.6	350	83	4.2
Total	19,320	4,083	4.7	14,725	2,848	5.2

Male sex work was reported to be highest in Karachi, with an estimated 4,550 MSWs at 820 spots, and an average of 5.5 per spot. This was closely followed by Faisalabad, with 4,045 MSWs at 1,015 spots (average 4 per spot). Larkana had the highest numbers of MSWs per spot (11), followed by Hyderabad (8).

HSWs were the smallest HRG found in selected cities, with nearly half (43% or 6,350) based in Karachi at 1,010 spots (average 6.3 per spot). Lahore and Faisalabad had the next highest estimates, with 2,600 HSWs at 585 spots (average 4.4 HSWs per spot), and 1,400 HSWs at 351 spots (average 4 HSWs per spot) respectively. Looking at the concentration per spot, Hyderabad reported the highest number of HSWs of all the cities surveyed (average 6.6 HSWs per spot).

Figure 5.1a: Distribution of HSWs in Karachi, 2006-07

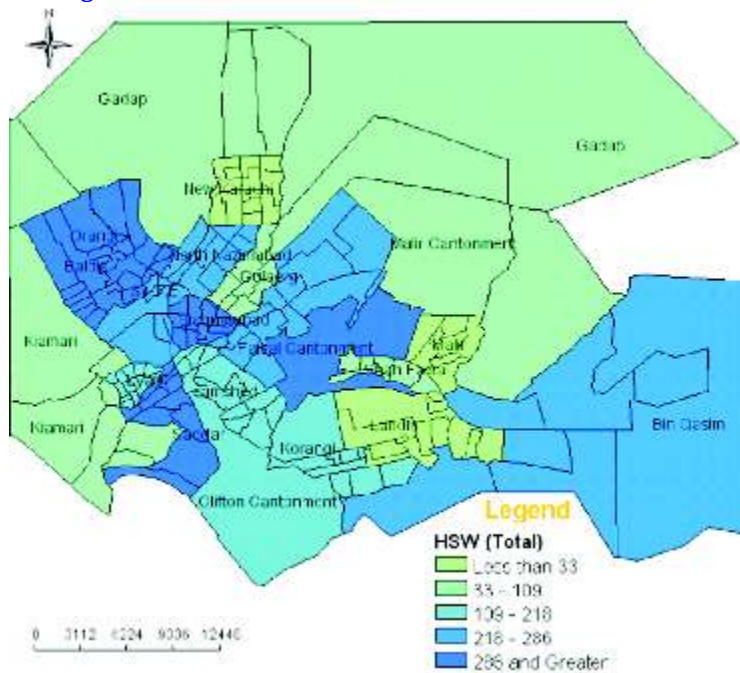


Figure 5.1b: Distribution of HSWs in Lahore, 2006-07

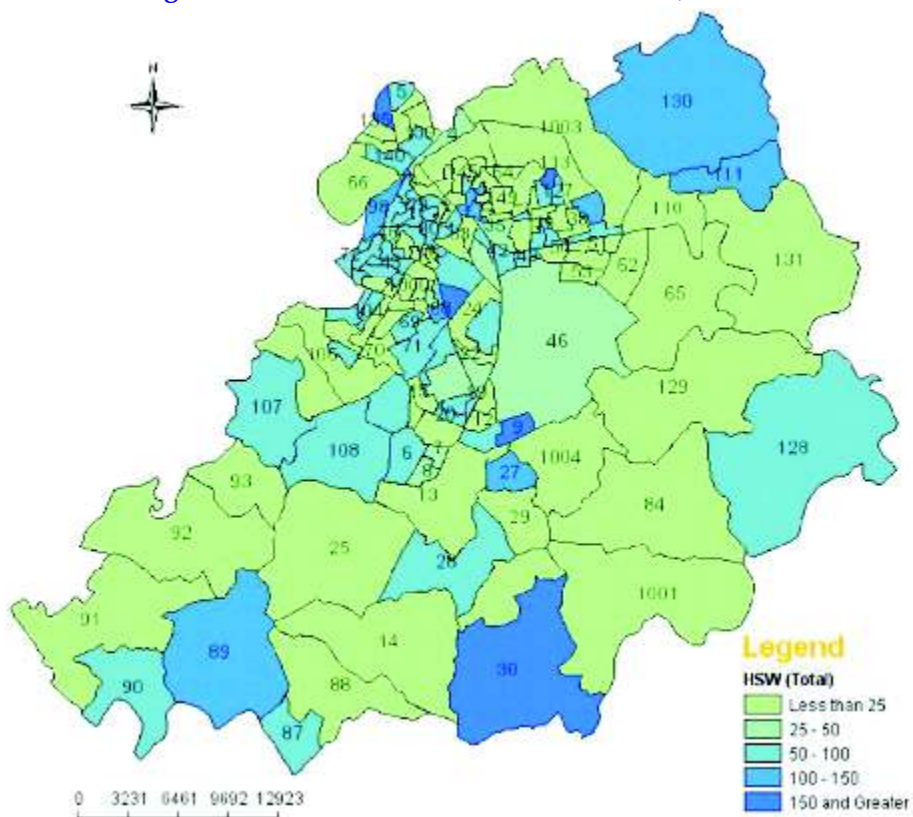


Figure 5.1c: Distribution of HSWs in Peshawar, 2006-07

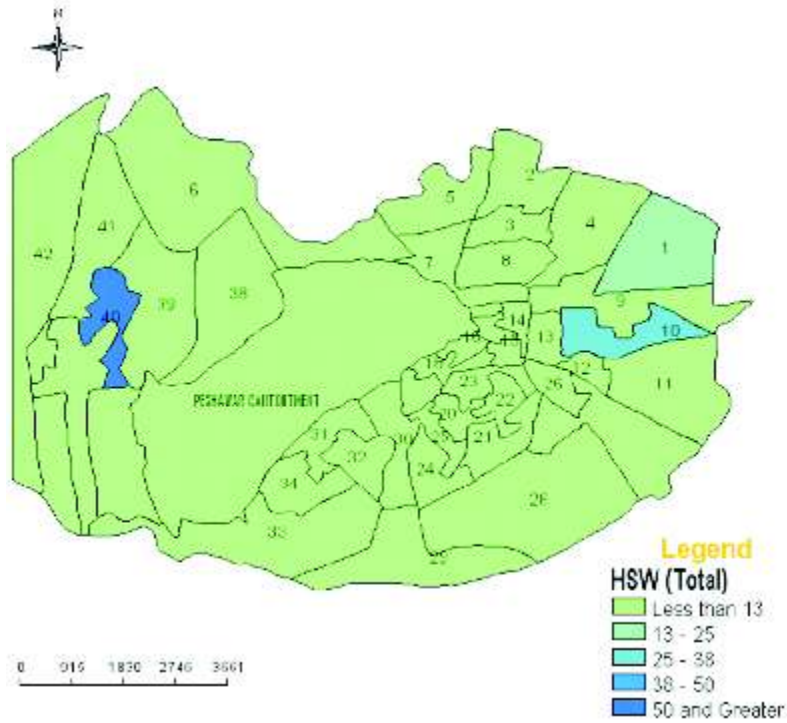
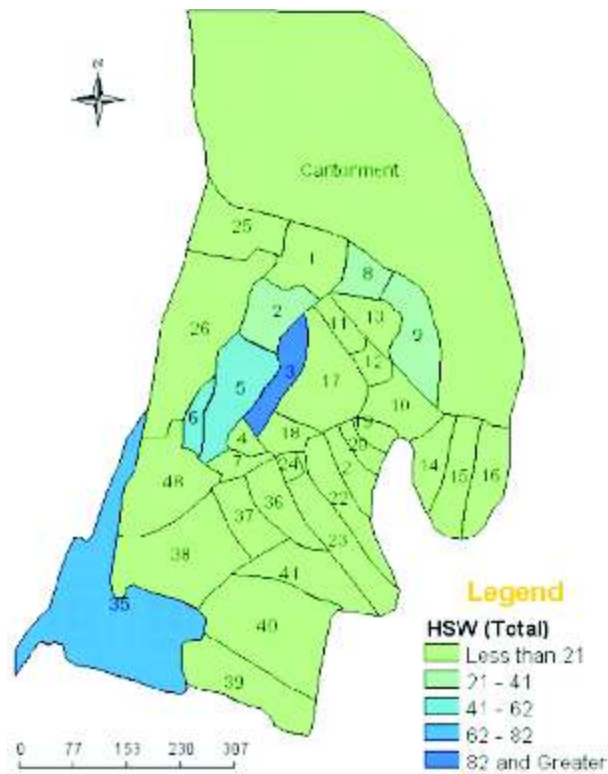
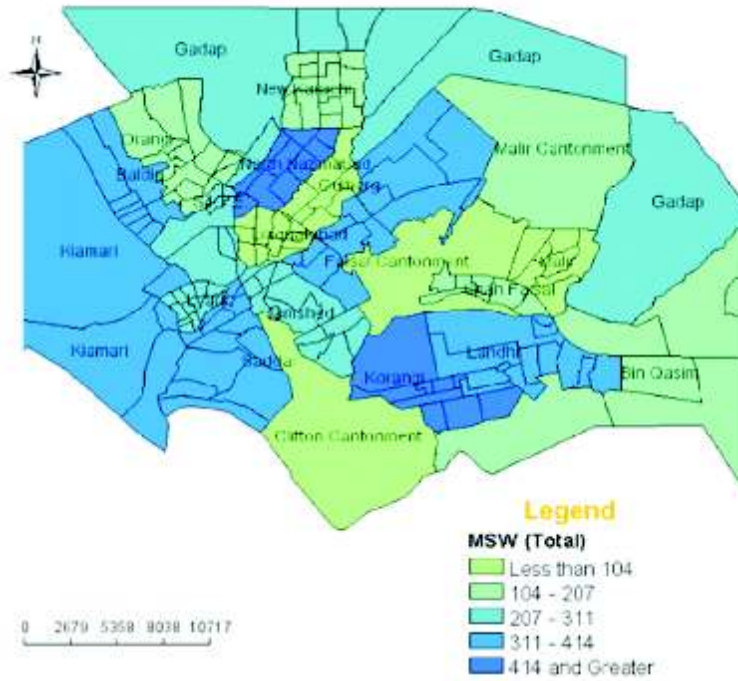


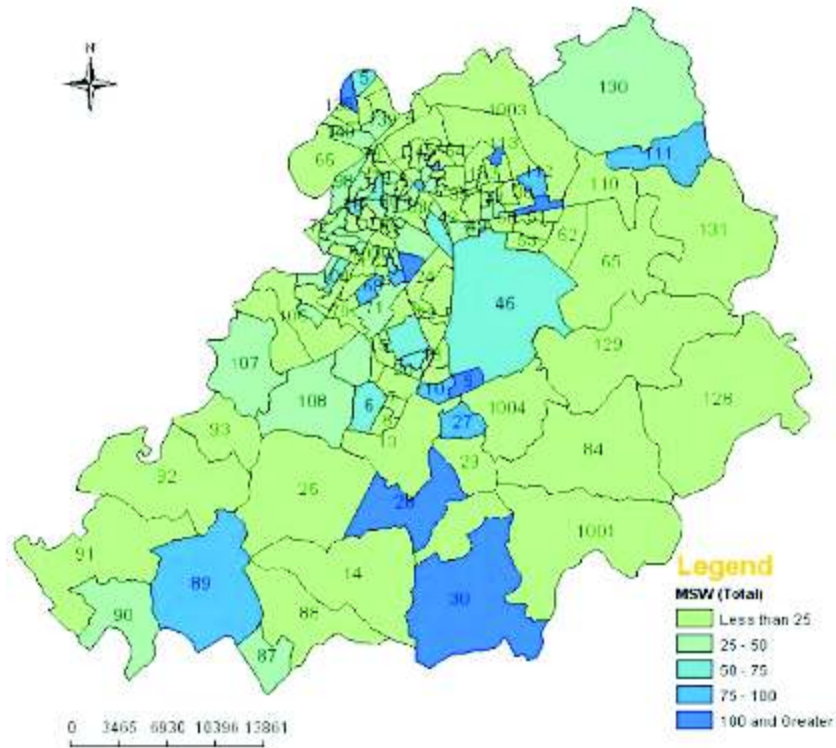
Figure 5.1d: Distribution of HSWs in Quetta, 2006-07



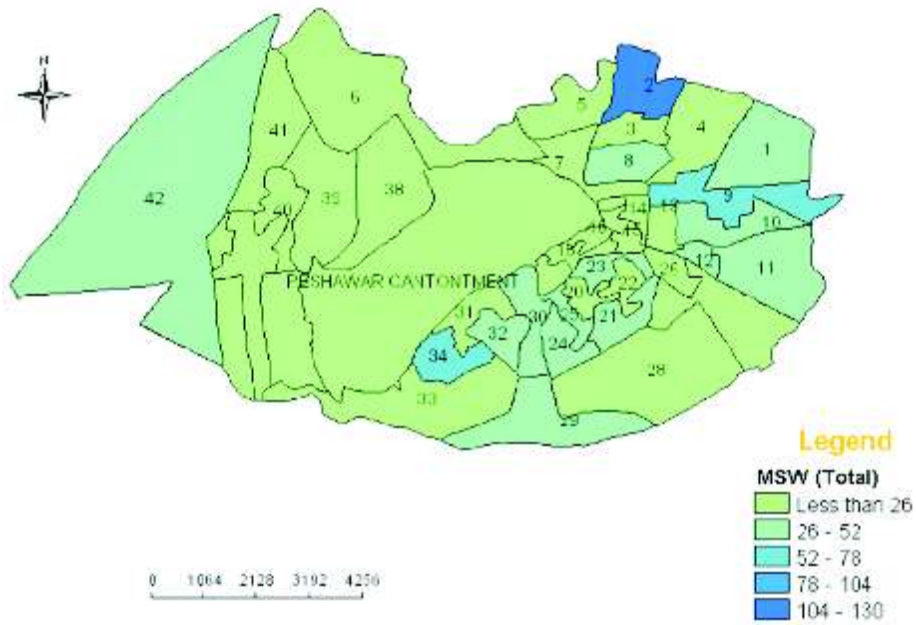
5.1e: Distribution of MSWs in Karachi, 2006-07



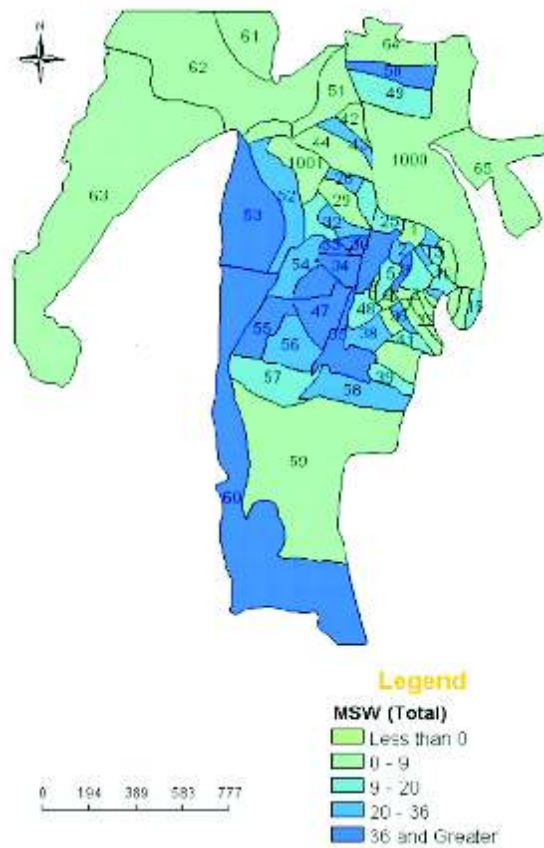
5.1f: Distribution of MSWs in Lahore, 2006-07



5.1g: Distribution of MSWs in Peshawar, 2006-07



5.1h: Distribution of MSWs in Quetta, 2006-07



5.2 Socio-Demographic Characteristics

Table 5.2a provides information on the key socio-demographic characteristics of a sample of 2,289 MSWs and 2,143 HSWs who were surveyed in 12 cities of Pakistan.

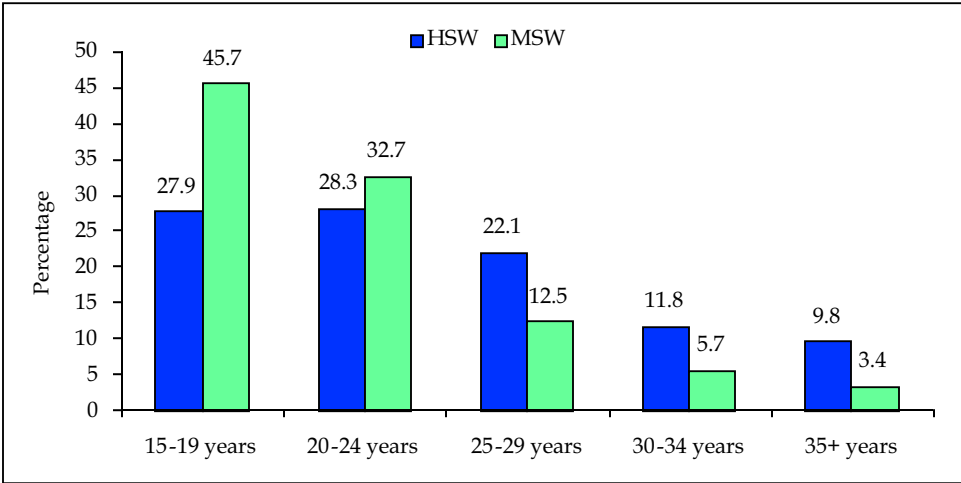
Table 5.2a: Socio-demographic characteristics of MSWs and HSWs, 2006-07

Characteristics	Total (n=4432)	MSW (n=2,289)	HSW (n=2,143)
Current age			
▪ 15-19 years	27.9%	45.7%	9.0%
▪ 20-24 years	28.3%	32.7%	23.6%
▪ 25-29 years	22.1%	12.5%	32.4%
▪ 30-34 years	11.8%	5.7%	18.4%
▪ 35+ years	9.8%	3.4%	16.7%
<i>Mean age ±SD (median) years</i>	<i>24.3 ± 6.4 (23)</i>	<i>21.3 ± 5.0 (20)</i>	<i>27.5 ± 6.3 (27)</i>
Marital status			
▪ Unmarried	84.0%	87.0%	80.8%
▪ Currently married	14.8%	12.4%	17.4%
▪ Separated / divorced	0.6%	0.3%	1.0%
▪ Widowed	0.6%	0.3%	0.8%
Number of children			
▪ None	19.9%	19.5%	20.2%
▪ 1 to 2	41.9%	45.2%	39.5%
▪ 3 to 4	27.4%	25.0%	29.0%
▪ 5+	8.0%	6.5%	9.0%
Year of formal education			
▪ Illiterate	46.8%	36.5%	57.8%
▪ Up to 05 years	20.2%	19.0%	21.5%
▪ 06 to 10 years	28.6%	37.6%	18.9%
▪ > 10 years	4.4%	6.8%	1.8%
Migration status			
▪ Migrated from another place	16.8%	13.7%	20.1%
Living arrangement			
▪ Lives at home	63.1%	84.3%	40.5%
▪ Lives alone	6.5%	6.4%	6.5%
Income from sex work (PKR)			
▪ Median income / month*	3000	3000	3000
Other sources of income	58.1%	61.9%	54.3%

*Mean income/month for total (± SD) 3835 ± 4118 PKR, MSW = 3328 ± 4179, HSW= 4476 ± 4050 PKR

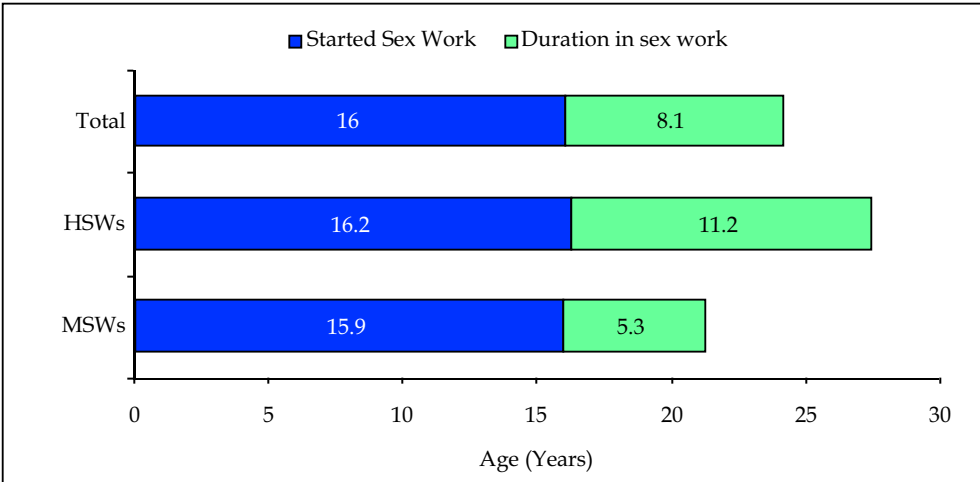
The average age of MSWs was reported to be 21.3 years \pm 5 (median = 20), while HSWs were reported to be 27.5 years \pm 6.3 (median = 27) (see Table 5.2a). Further analysis demonstrated that larger proportions of MSWs were in younger age groups in comparison to HSWs who were much older in age (Figure 5.2a).

Figure 5.2a: Age distribution of MSWs and HSWs, 2006-07



Both MSWs and HSWs initiated sex work at approximately the same age; 15.9 years for MSW, and 16.2 for HSW; however HSWs reported to be involved in commercial sex work for a substantially longer period (11.2 years) compared to MSWs (5.3 years) (Figure 5.2b).

Figure 5.2b: Mean age of initiation and duration in sex work of MSWs and HSWs, 2006-07



Stratified analysis showed that on average, MSWs in Hyderabad (29.8 years) and Lahore (25 years) were older in comparison to other cities. Although sex work was initiated at around the same age by MSWs in Lahore, Hyderabad and Karachi, those in Hyderabad tended to spend the longest duration in sex work (11.7 years) in contrast to MSWs in Lahore (6.4 years) and Sukkhur (2.7 years). HSWs in Faisalabad started sex work at the youngest age (13.2 years) and spent the longest duration (11.7 years) in sex work (Figure 5.2c and Figure 5.2d).

Figure 5.2c: Mean age of initiation, duration and current age of MSWs by city, 2006-07

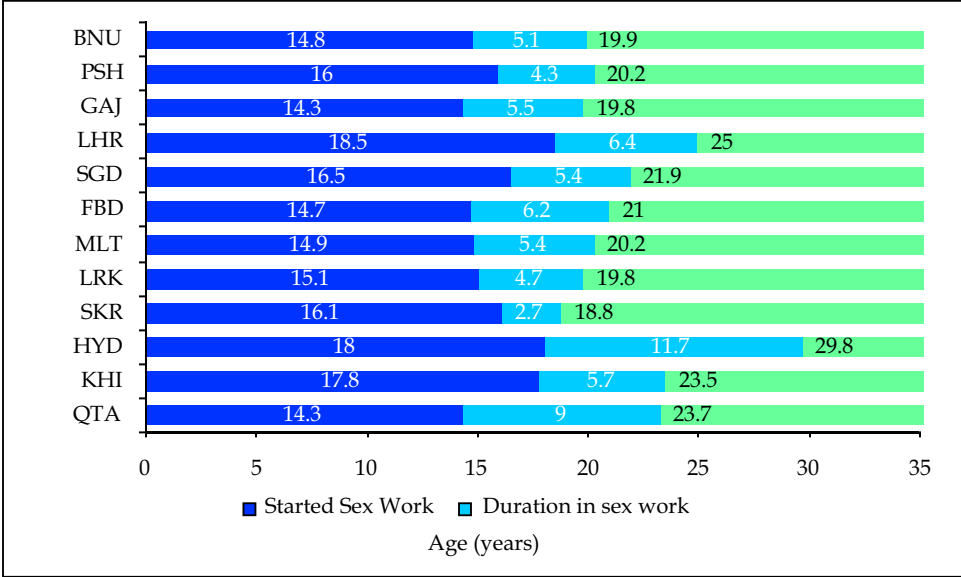
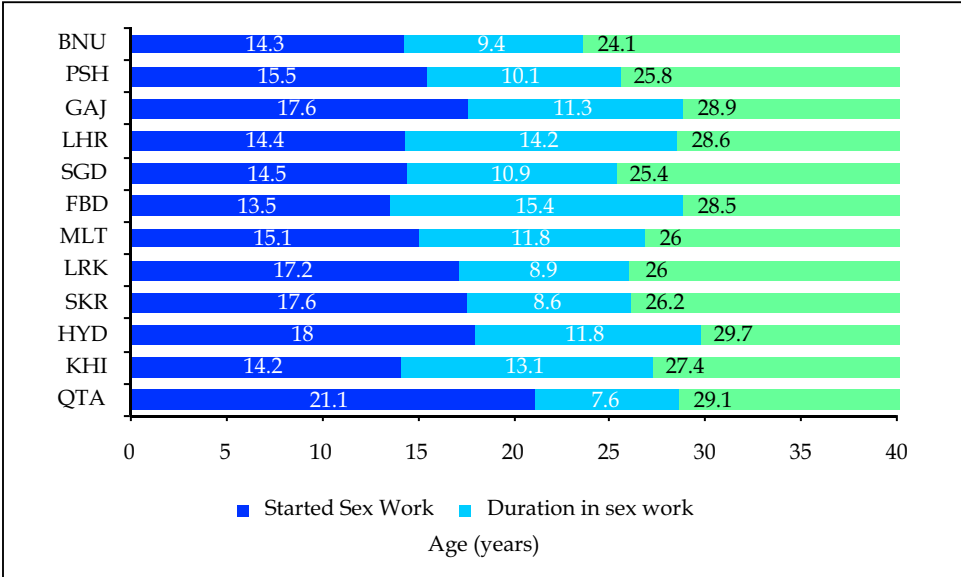
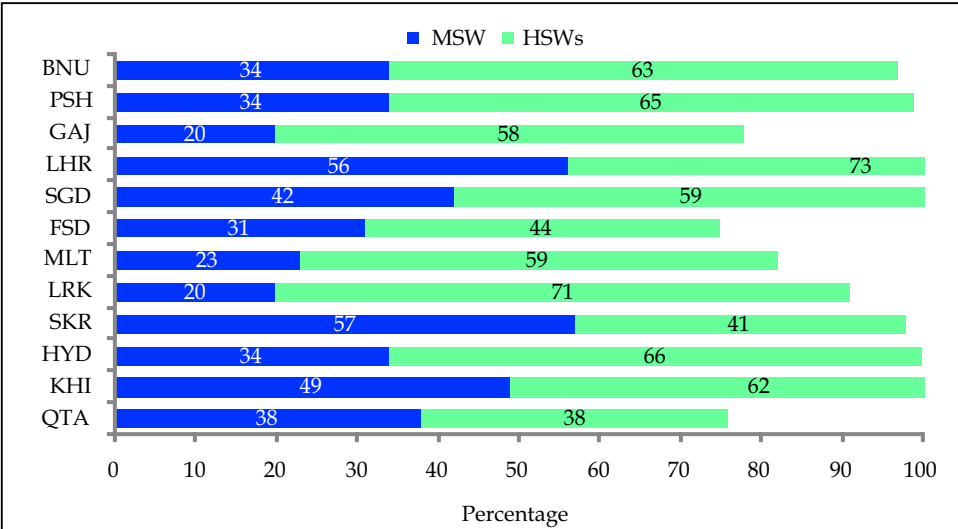


Figure 5.2d: Mean age of initiation, duration and current age of HSWs by city, 2006-07



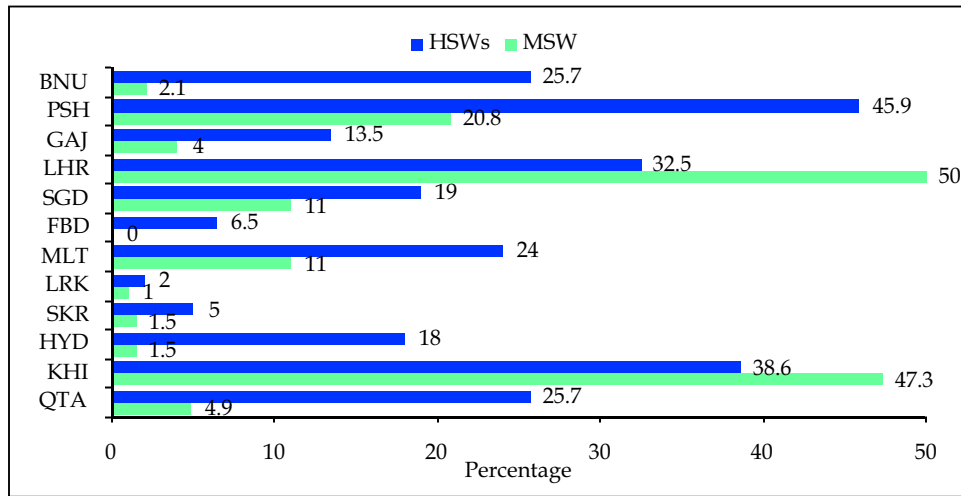
The majority of MSWs interviewed had received at least primary education (52.2%), while 57.5% of HSWs were illiterate (Table 5.2a). Education levels of both MSWs and HSWs varied substantially across cities. Among MSWs, the highest levels of illiteracy were reported from Sukkhur (57%) and Lahore (55.5%), while among HSWs, Lahore (72.5%), Larkana (70.5%) and Hyderabad (66%) ranked highest (Figure 5.2e).

Figure 5.2e: Illiteracy among MSWs and HSWs by city, 2006-07



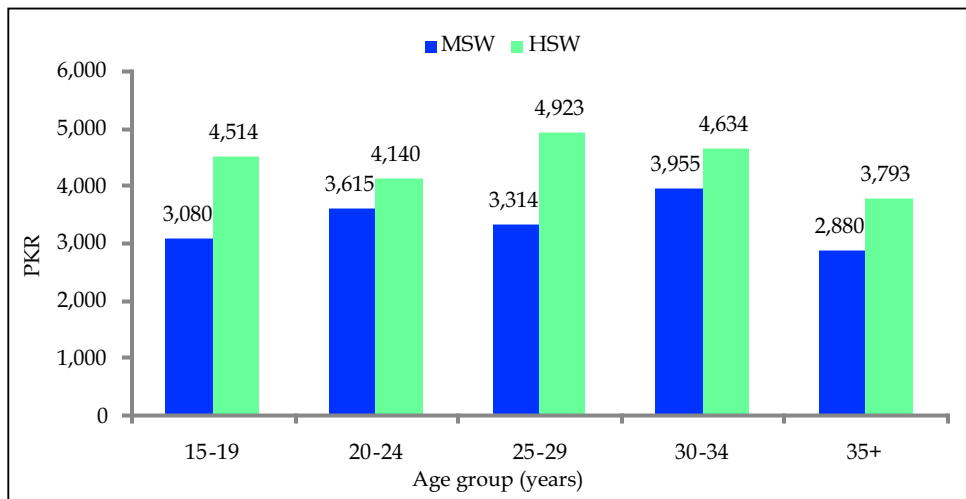
Approximately, 80% of HSWs and 86% of MSWs were natives. City wise analysis showed that MSWs in Lahore and Karachi; and HSWs in Peshawar and Karachi had higher proportions of migration from smaller cities. In Faisalabad, Larkana, Sukkhur and Hyderabad, little or no migration was reported. Analysis of the migratory pattern of the four provincial capitals showed that most MSWs and HSWs in Lahore and Peshawar migrated from different cities of the same province. In contrast, in Quetta, both MSWs and HSWs had migrated from outside the province, principally from Sindh and Punjab. In Karachi, a mixed migratory pattern was seen, where both MSWs and HSWs migrated from smaller cities in Sindh and Punjab (Figure 5.2f).

Figure 5.2f: Migration among MSWs and HSWs by city, 2006-07



The average monthly income of both MSWs and HSWs was approximately PKR 3,835 or USD 63.9 ± 4,118 (median = 3,000). However, HSWs earned substantially more (4476 rupees per month- 74.6US\$) in comparison to MSWs who earned approximately PKR 3328/month (55.5 US\$) (Table 4.2a). There was not much difference in monthly income from sex work by age for MSWs and HSWs, but in both the groups older sex workers tend to earn less than younger ones (Figure 5.2g).

Figure 5.2g: Average monthly sex work income of MSWs and HSWs by age group, 2006-07



A large proportion of MSWs (61.9%) and HSWs (54.3%) had a source of income other than sex work. Some of the MSWs reported working as laborers, factory workers, bus/van conductors and tailors. A substantial number of MSWs worked in canteens, mechanic shops, as well as masseurs; a few were also students. HSWs were mainly singers and dancers.

5.3 Sexual Behaviors and Practices

A large majority of both MSWs and HSWs (48.4%) reported soliciting clients by “roaming around” in public places and at private parties (Table 5.3a).

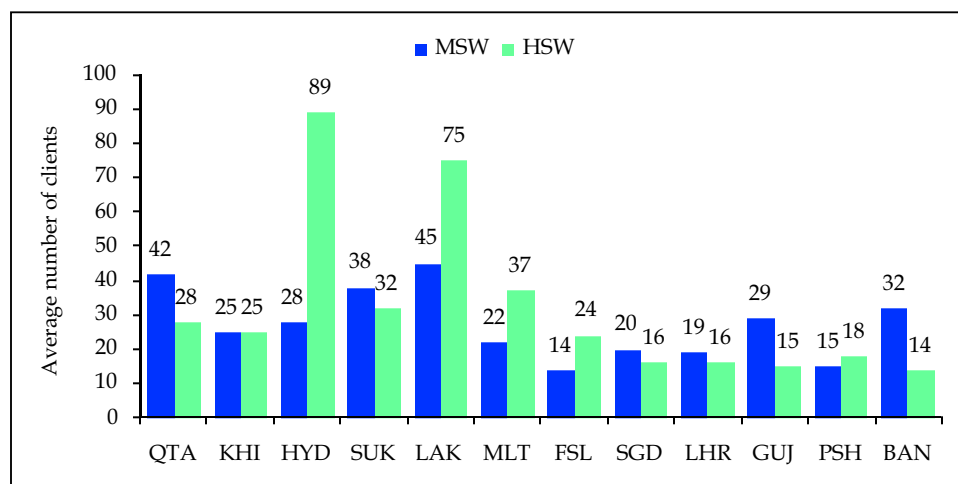
Table 5.3a: Sexual behaviors and practices of MSWs and HSWs, 2006-07

Practice / Behavior	Total (n=4,432)	MSW (n= 2,289)	HSW (n= 2,143)
Main source of clients			
▪ Pimp / Guru	13.2%	4.4%	22.5%
▪ Roaming around	48.4%	77.4%	17.4%
▪ Other sources	38.4%	18.2%	60.0%
Client information			
▪ Avg. clients / day \pm SD	2.3 \pm 1.8	2.1 \pm 1.5	2.5 \pm 2.1
▪ Avg. clients last month \pm SD	28.6 \pm 26.4	25.8 \pm 19.9	32 \pm 32.4
Non commercial partners			
▪ At least one other partner last month	33.8%	34.6%	32.9%
Consistent condom use	7.7%	8.0%	7.5%
Paid anyone for anal sex in the last month	10.9%	10.9%	N/A*
Alcohol/drugs during sex in the past 6 months	36.2%	30.6%	42.2%
Injected drugs in the past 6 months	5.7%	5.2%	6.3%
Had sex with IDUs in past 6 months	8.0%	9.5%	6.4%

* not asked from HSWs

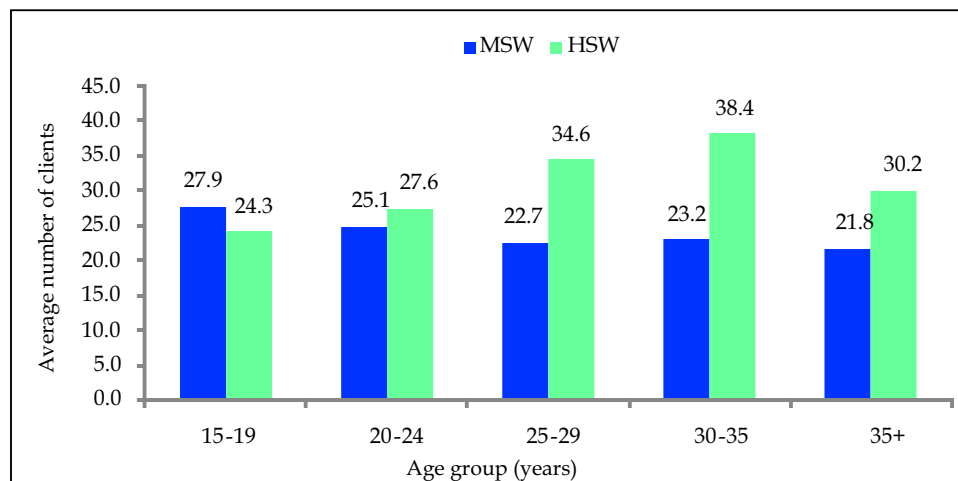
MSWs had an average of 2.1 \pm 1.5 clients a day in comparison to HSWs who had an average of 2.5 \pm 2.1. The average number of clients over the past month was reported to be 28.6 \pm 26.4, which ranged from 32 clients per month for HSWs, to 25.8 clients for MSWs. Monthly client volume varied substantially between different cities for both groups. Client volume in the past month for MSWs ranged from 45.2 clients in Larkana to 13.6 in Faisalabad (Figure 5.3a). In comparison, average client volume for HSWs ranged between 89.2 clients in Hyderabad to 14 in Bannu (Figure 5.3a).

Figure 5.3a: Average number of clients in the last month for MSWs and HSWs by city, 2006-07



Further analysis of the client volume showed that the average number of MSW clients in the past month dropped from 27.9 to 21.8 per month with age. In comparison, the number of clients increased from 24.3 to 38.4 for HSWs till the age of 35 years, while dropping among the older age group (35+ years) (Figure 5.3b).

Figure 5.3b: Average number of clients in the past month for MSWs and HSWs by age group, 2006-07

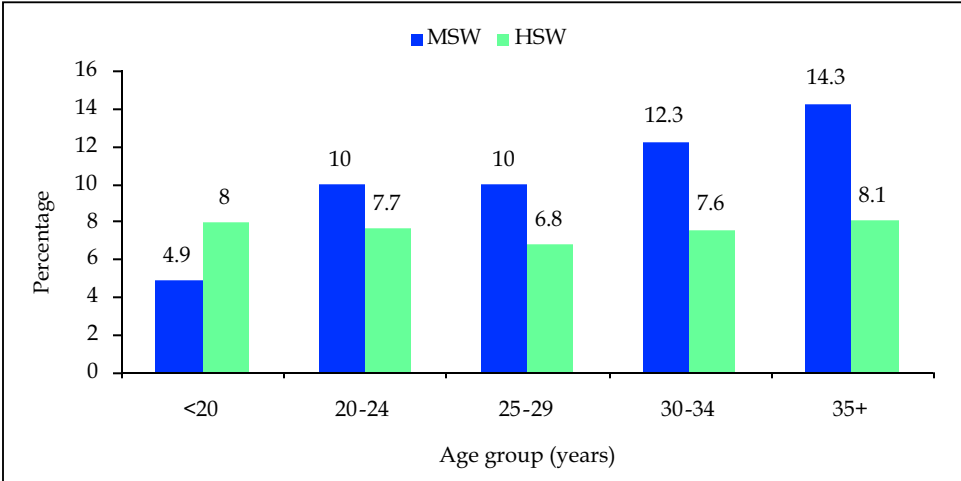


In addition to paying clients, 34.6% of MSWs and 32.9% of HSWs reported at least one non-commercial male partner in the last month (Table 5.3a).

Condom use during sexual activity with clients by both groups was generally low. Only 7.7% of MSWs and HSWs reported that they “always used condom with their clients” in the last month. Consistent condom use was reported lowest by younger MSWs in comparison to older MSWs. No difference in consistent condom

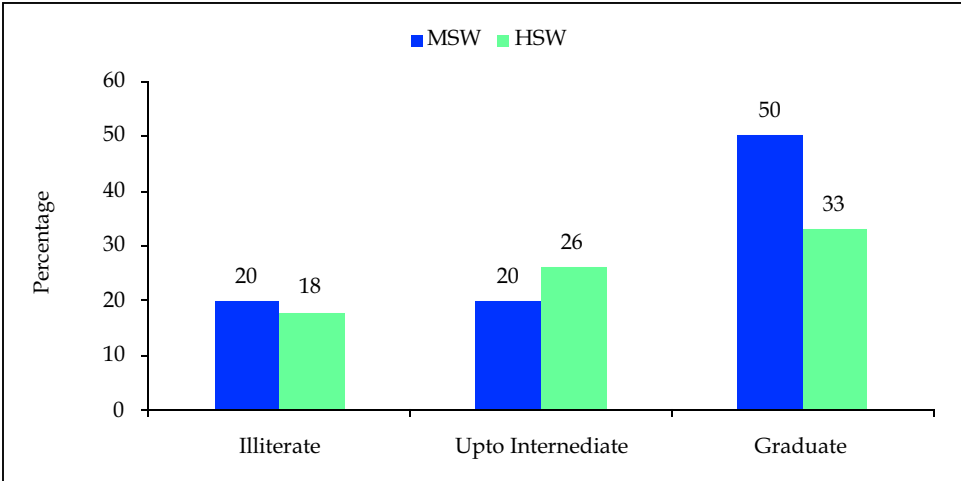
use was observed between different age groups for HSWs (Figure 5.3c). Consistent with this, less than 22% of each group reported condom use during anal sex for the last sexual intercourse with a paying client, and only 10% used a condom for oral sex with their last client.

Figure 5.3c: Consistent condom use by MSWs and HSW among different age groups, 2006-07



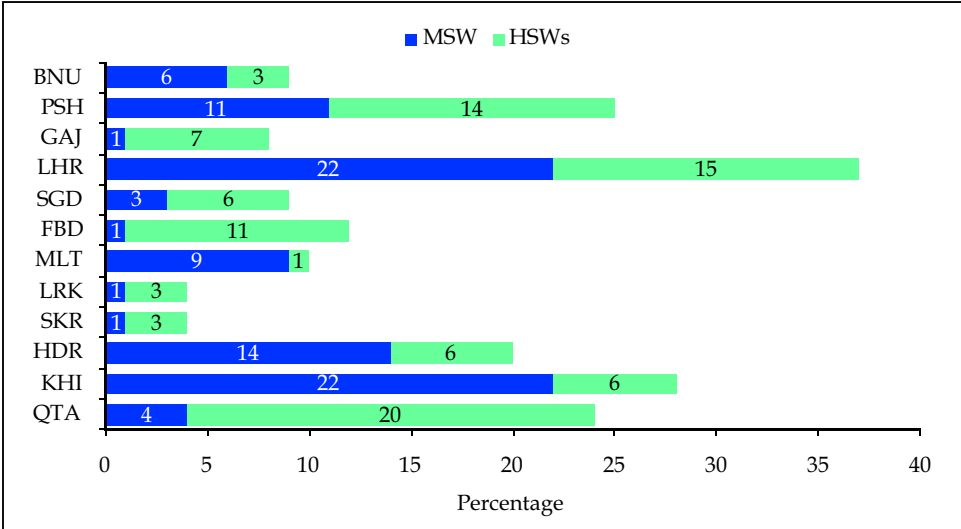
An association was seen between consistent condom use and education. Condom use was lowest among illiterate MSWs and HSWs in comparison to those who had higher levels of education (i.e., 50% among MSW graduates and 33% among HSW graduates) (Figure 5.3d).

Figure 5.3d: Proportion of MSWs and HSWs using condoms in the past month with clients by education level, 2006-07



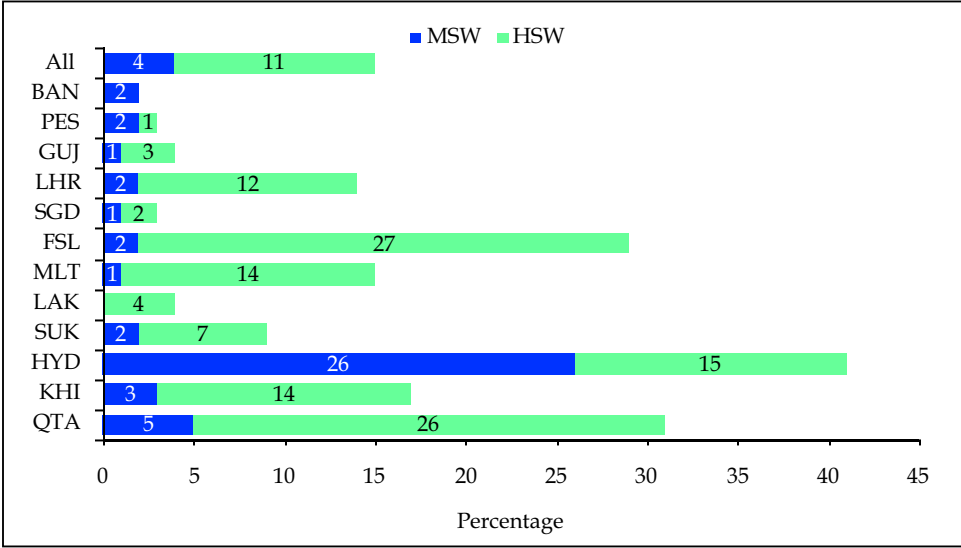
Consistent condom use during the past month by MSWs and HSWs varied substantially across cities, with the highest reported consistency among MSWs in Karachi and Lahore (22% for both cities). HSWs in Quetta reported the highest consistent use (20%) (Figure 5.3e).

Figure 5.3e: Proportion of MSWs and HSWs consistently using condoms with clients by city, 2006-07



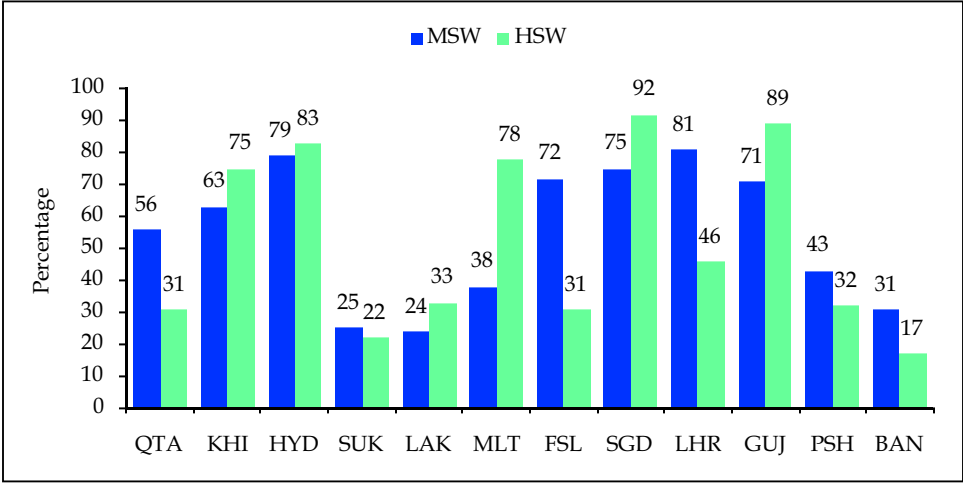
Only 11% of HSWs and 4% of MSWs were carrying a condom with them at the time of interview. In most cities, HSWs were carrying condoms more often than MSWs (Figure 5.3f)

Figure 5.3f: Proportion of MSWs and HSWs carrying a condom at the time of the survey by selected cities, 2006-07



Approximately 50% of both MSWs and HSWs reported using lubricant for anal sex with last clients; there were no significant differences between MSWs and HSWs (Figure 5.3g).

Figure 5.3g: Use of any type of lubrication in last anal sex encounter with a client by MSWs and HSWs by city, 2006-07



Approximately 36% of both MSWs and HSWs reported using alcohol or drugs during sex in the past six months, about 6% reported injecting drugs, and 8% had sex with IDUs during the same period. City wise distribution of MSWs and HSWs who injected drugs and had sex with IDUs is shown in Fig 5.3h and Fig 5.3i.

Figure 5.3h: City wise distribution of MSWs injecting drugs and having sex with an IDU, 2006-07.

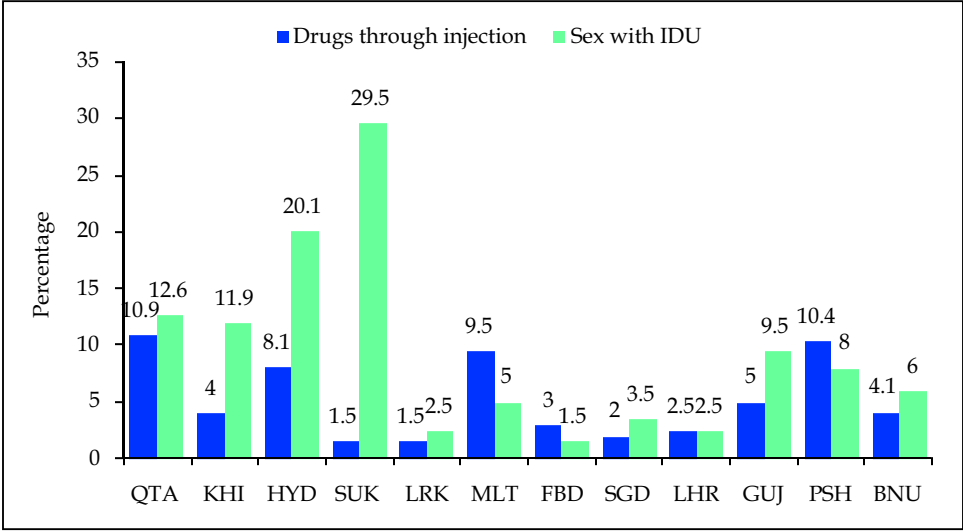
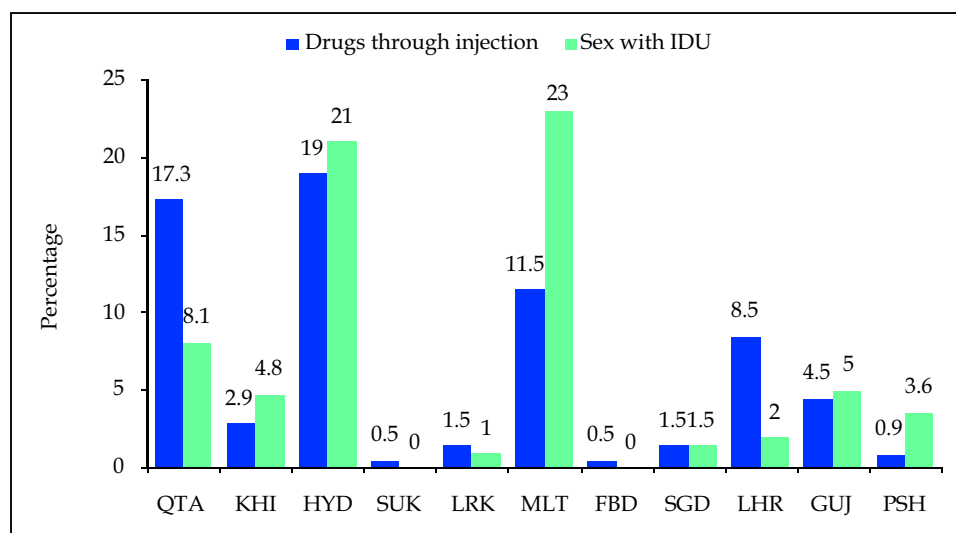


Figure 5.3i. City wise distribution of HSWs injecting drugs and having sex with an IDU, 2006-07.



5.4 HIV Related Knowledge, Program Exposure and Violence

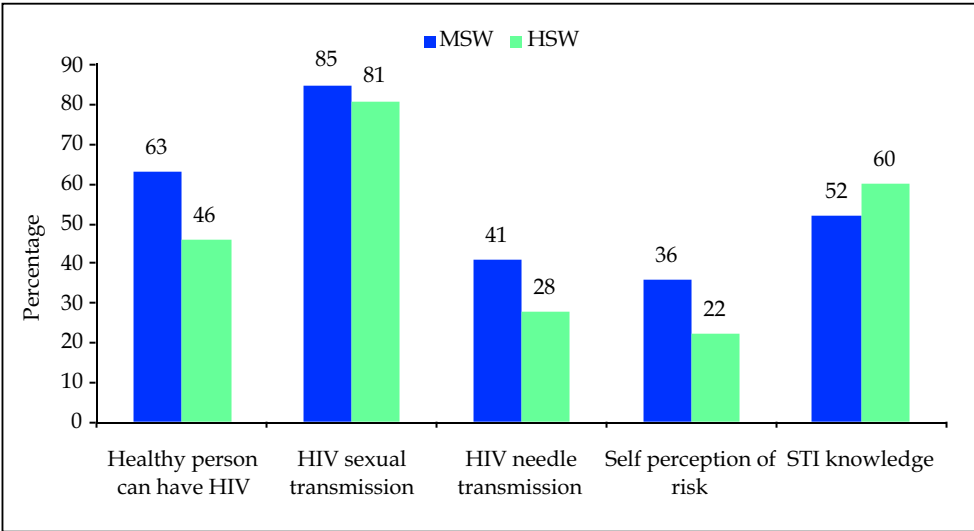
Table 5.4a: HIV related knowledge, program participation and reported violence among MSWs and HSWs, 2006-07

Knowledge area	Total (n=4,432)	MSW (n= 2,289)	HSW (n= 2,143)
Ever heard of HIV and/or AIDS	66.3%	66.5%	66.1%
Healthy looking person can have HIV / AIDS*	54.6%	62.6%	46.2%
HIV transmitted by sexual intercourse*	83.2%	84.9%	81.3%
HIV transmitted by sharp instrument/needle*	35.1%	41.4%	28.4%
Condom can prevent HIV transmission*	52.2%	54.0%	50.2%
Sexual abstinence to prevent HIV transmission*	58.6%	66.0%	51.0%
Ever tested for HIV*	6.1%	3.9%	9.3%
Know where to receive HIV test*	13.2%	12.9%	13.6%
Self perception of risk for HIV	29.4%	36.5%	22.2%
Aware of STIs	55.9%	51.9%	60.3%
Self-reported STI in past 6 months*	10.4%	12.4%	9.2%
Receive treatment for reported STI*	47.9%	35.0%	68.9%
Ever heard of HIV prevention programs	15.9%	10.3%	22.0%
Participated in HIV programs	3.4%	2.7%	4.2%
Violence/force for sex in past 6 months	23.8%	22.2%	25.5%
Arrested in the past 6 months	11.4%	10.8%	12.0%

*Valid percentages (i.e., of those who "ever heard of HIV and/or AIDS")

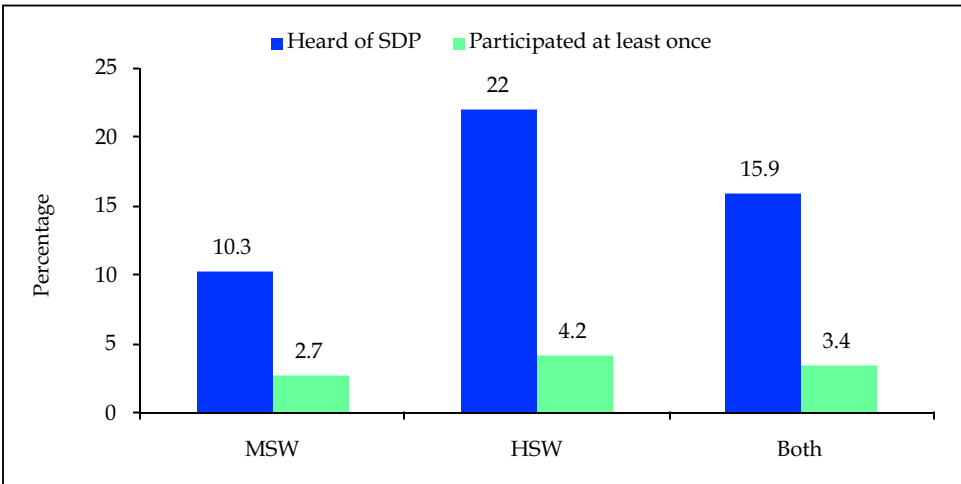
Approximately, 66% of all MSWs and HSWs had heard of HIV and/or AIDS (Table 5.4a). Of those who heard of HIV or AIDS, 54.6% believed that a healthy looking person can be living with HIV. Knowledge of sexual intercourse as a mode of transmission of the disease was prevalent among 83.2%. Only 35% knew that HIV can be transmitted by sharp instruments/syringes. MSWs were more aware of the modes of transmission and had a higher self perception of risk more than HSWs. However, HSWs had a better awareness of STIs, and were treated more often for STIs when they got infected.

Figure 5.4a: Knowledge about HIV and STIs among MSWs and HSWs, 2006-07



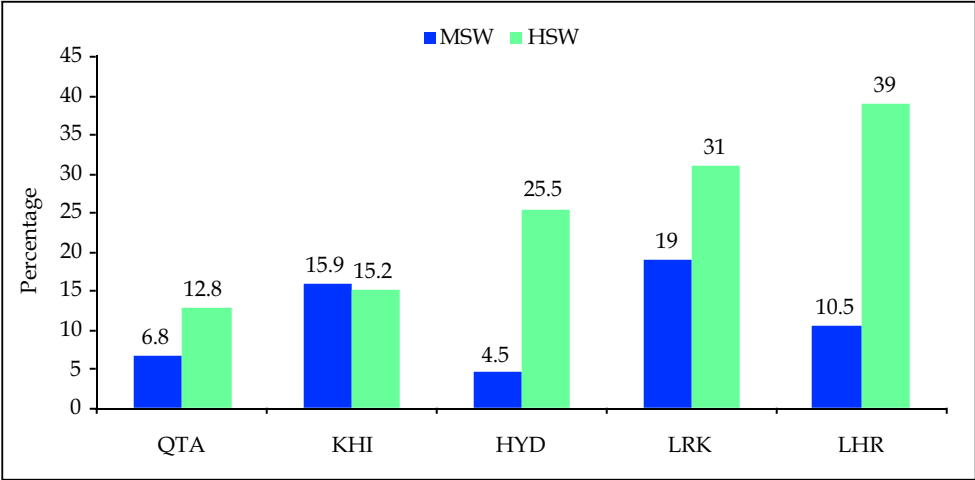
Approximately 52.2% of both MSWs and HSWs, who heard of HIV/ AIDS, knew condom use could prevent HIV, and 58.6% believed that sexual abstinence is a method to prevent transmission. Thirteen percent of MSWs, and 13.6% of HSWs knew of a place where they could be tested for HIV.

Figure 5.4b: Knowledge and participation in HIV prevention programs among MSWs and HSWs, 2006-07



Sixteen percent of both MSWs and HSWs were aware of HIV prevention programs in their city, although only 3.4% of the total sample reported utilizing these services. Although, 22% of the HSWs had the knowledge of these SDPs, only 4.2% reported to have utilized the services. Program knowledge varied substantially across cities; with the highest knowledge levels coming from HSWs in Lahore, Larkana and Hyderabad (Figure 5.4c)

Figure 5.4c: Knowledge of HIV prevention programs among MSWs and HSWs by selected cities, 2006-07



Although utilization of prevention programs by MSWs and HSWs were reported to be low, a significant difference was seen in the knowledge and awareness level of MSWs and HSWs among those who utilized these services. (Table 5.4b)

Table 5.4b: HIV knowledge levels among MSWs and HSWs by SDP usage, 2006-07

HIV knowledge indicator	MSW		HSWs	
	ever utilized SDPs	never utilized SDPs	ever utilized SDPs	never utilized SDPs
Healthy looking person can be infected with HIV	70.9%	62.3%	65.9%	44.9%
HIV can be transmitted by				
▪ sexual intercourse	94.3%	84.6%	94.1%	80.5%
▪ infected syringe	41.5%	41.4%	48.2%	27.2%
HIV can be prevented by				
▪ condoms	73.5%	53.3%	78.8%	48.4%
▪ clean syringes	35.7%	24.5%	47.1%	14.5%
Perception of self risk	41.5%	36.3%	32.9%	21.5%
Ever tested for HIV	21.7%	3.4%	29.4%	8%
Aware of STIs	80.3%	51.1%	84.3%	59.4%
Consistent condom use	24.6%	7.5%	25.8%	6.7%

5.5 HIV Prevalence

Among MSWs, HIV sero-prevalence was 1.5% (95% CI: 1, 2), and 1.8% (95% CI; 1.3, 2.5) among HSWs. HIV sero-positivity was highest among MSWs in Karachi (7.5%), followed by Bannu (4%), Larkana and Faisalabad (2.5% each). For HSWs, the highest prevalence was recorded in Larkana (14%) (Figure 5.5a).

Figure 5.5a: HIV prevalence among MSWs and HSWs by city, 2006-07

City	MSWs			HSWs		
	Prevalence	Tested	Positive	Prevalence	Tested	Positive
Karachi	7.5%	201	15	0.0%	210	0
Hyderabad	0.0%	199	0	2.0%	200	4
Sukkhur	0.0%	200	0	0.0%	200	0
Larkana	2.5%	200	5	14.0%	200	28
Multan	0.5%	200	1	0.5%	200	1
Faisalabad	2.5%	200	5	0.5%	200	1
Sargodha	1.0%	200	2	0.5%	200	1
Lahore	0.0%	200	0	0.0%	200	0
Gujranwala	0.0%	200	0	0.5%	200	1
Peshawar	0.9%	212	2	0.9%	111	1
Bannu	4.0%	100	4	5.7%	35	2
Quetta	0.0%	177	0	0.0%	187	0
Total	1.5%	2,289	34	1.8%	2,143	39

The various factors which were thought to be associated with transmission of HIV among MSWs and HSWs were examined, and the results are provided in Table 5.5b. Being HIV positive could be associated with illiteracy, having more than 30 clients per month, and not using condoms consistently.

Table 5.5b: A comparison of socio-demographic and sexual practices among HIV +ve/-ve MSWs and HSWs, 2006-07

Variable	MSW		HSW	
	HIV (-ve)	HIV (+ve)	HIV (-ve)	HIV (+ve)
Age category				
▪ 15-19	45.7%	36.8%	9.1%	0.0%
▪ 20-24	32.8%	26.3%	23.4%	30.8%
▪ 25-29	12.5%	21.1%	32.3%	35.9%
▪ 30-35	5.6%	15.8%	18.4%	17.9%
▪ >35	3.4%	0.0%	16.7%	15.4%
Illiterate*	36.3%	42.1%	57.2%	71.8%
Had more than 30 clients/month*	23.9%	38.5%	34.2%	50.0%
Always used condom*	8.0%	0.0%	7.6%	2.6%
Took drugs through injection*	5.3%	0.0%	6.4%	0.0%
Had sex with an IDU*	9.5%	5.3%	6.4%	2.6%
Knows HIV spread by sex	84.9%	85.7%	81.3%	85.7%
Knows condoms protects HIV*	53.9%	66.7%	50.2%	42.9%
Utilize SDPs*	26%	0.0%	13.6%	25%

*Statistically significant p-value <0.05

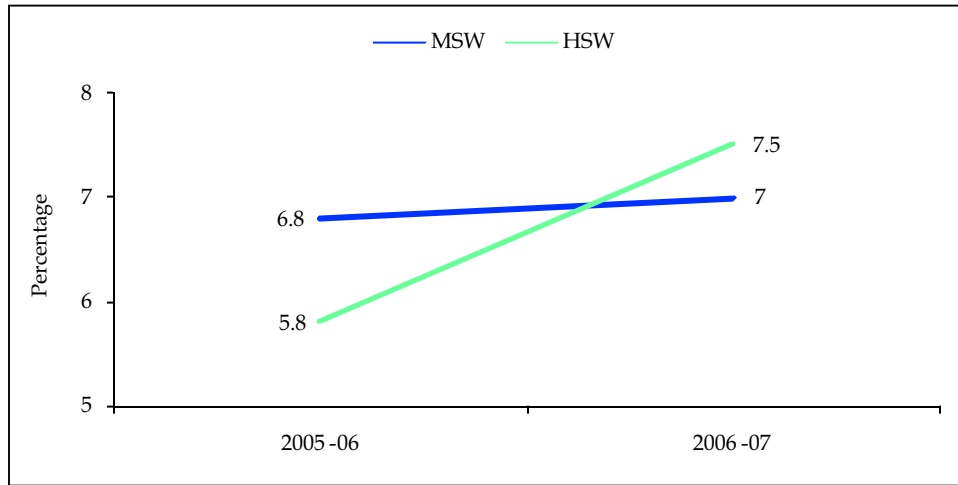
5.6 Summary

A comparison of the results of Rounds 1 and 2 has shown an increase in the estimates of MSWs, and a slight decrease in the estimates of HSWs. The estimates of MSWs increased from 11,798 to 16,445 in the eight cities that were included in this analysis. This increase can be attributed to an improvement in the mapping technique and experience of the staff in identifying MSWs as well as a better penetration into the sexual networks.

The estimates of HSWs decreased in Round 2 from 14,131 to 12,900. One of the reasons that could account for this change is a modification in the mapping technique, where networks and *Gurus* were approached for validation. However, the exact reasons for this decline in numbers remains to be further explored.

The consistent use of condoms with clients over the last month as reported by MSWs and HSWs continued to be low but a slight improvement was noticed from Round 1 to Round 2 (Figure 5.6a).

Figure 5.6a: Consistent condom use by MSWs and HSWs over time



This improvement was significant among MSW in Karachi, Hyderabad, Multan, and Lahore, while an equally significant reduction in the consistent use of condoms was seen in Quetta. Peshawar showed a slight increase in consistent condom use by MSWs over time (Figure 5.6b). Among HSWs, consistent use of condoms had significantly increased in Faisalabad, Lahore and Peshawar, while in Karachi, Sukkhur, and Quetta condom usage had reduced (Figure 5.6c).

Figure 5.6b: Consistent condom use among MSW over time

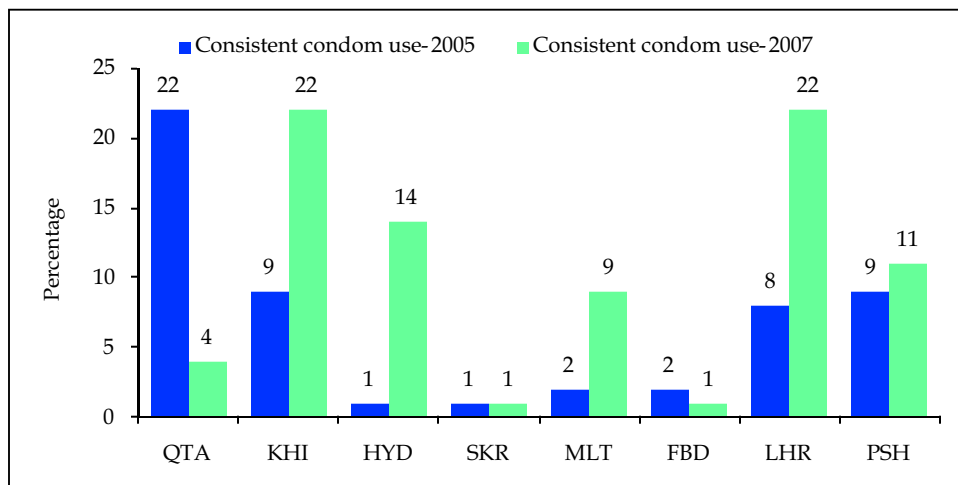
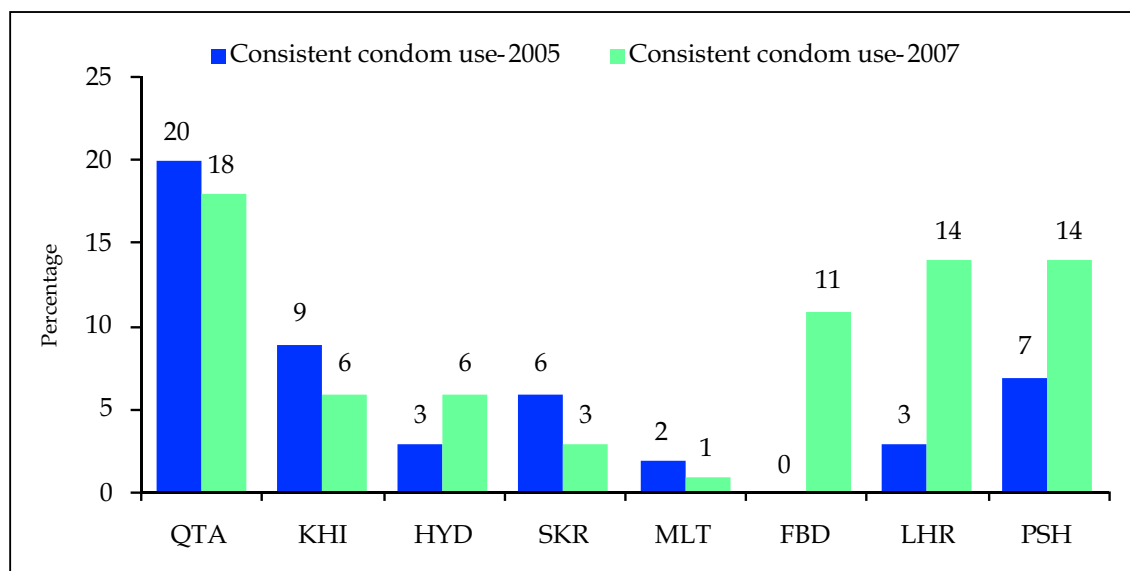


Figure 5.6c: Consistent condom among HSWs over time



The knowledge of HIV and STIs had decreased slightly among MSWs; however perception of self risk of acquiring HIV had increased considerably. Similarly, HSWs reported a decline in the knowledge of HIV, while self perception of being at risk to STIs increased. Among MSWs a decrease can be seen regarding the knowledge of different modes of transmission, and the role of condom use in HIV prevention. No notable change in HSWs' knowledge in this area was observed (Figures 5.6d and 5.6e).

Figure 5.6d: Changes in knowledge regarding HIV and STIs among MSWs and HSWs over time

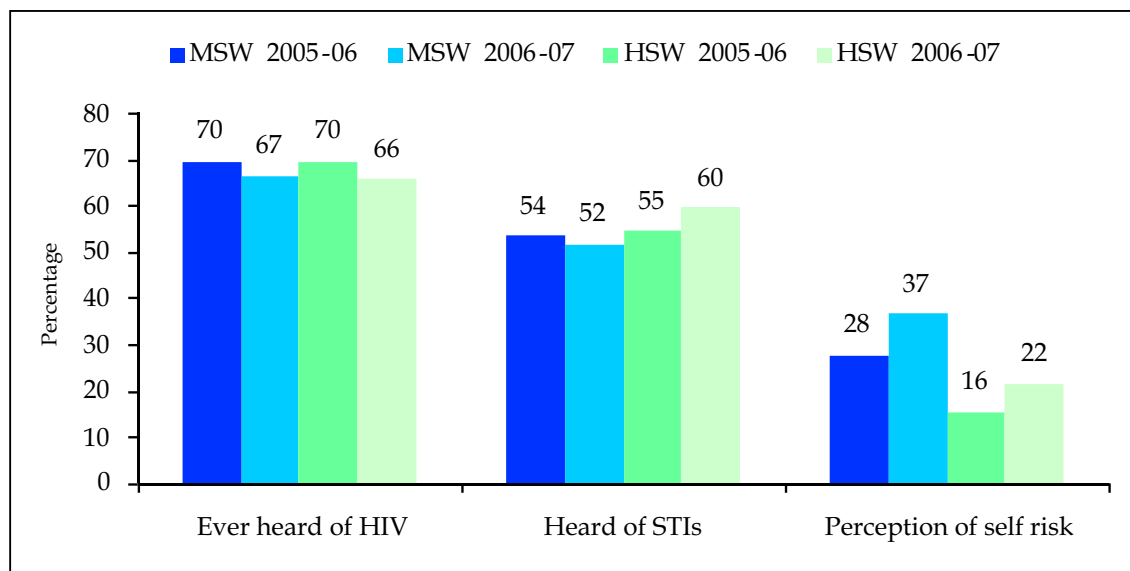
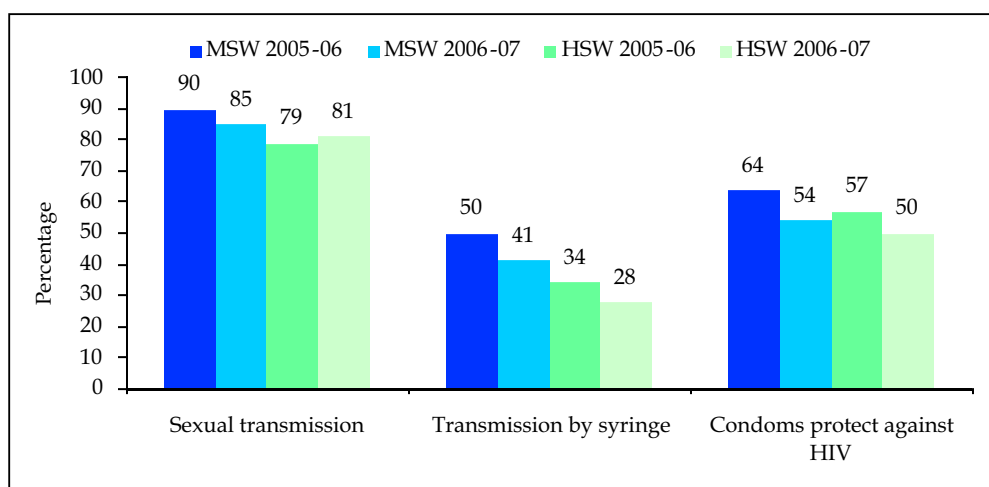


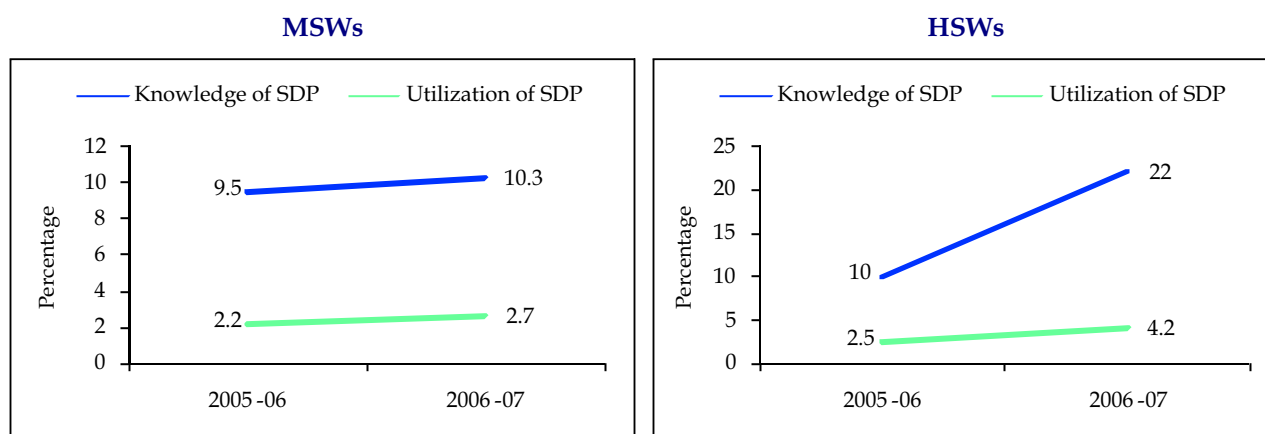
Figure 5.6e: Changes in knowledge of HIV transmission and prevention among MSWs and HSWs over time



Knowledge of SDPs and their utilization remained nearly unchanged among MSWs (i.e., 9.5% in Round 1 compared with 10.3% in Round 2); utilization also showed insignificant change and remains extremely low (i.e., only 3% of the MSWs ever utilized services provided by SDPs) (Figure 5.6f).

In contrast, program knowledge among HSWs improved dramatically from 10% in Round 1 to 22% in Round 2. Utilization also improved from 2.5% to 4.2% over the same period. It is interesting to note that there is a higher proportion of HIV positive HSW who had used SDP than HIV-negative HSW. This could be due to a small number of HIV positive HSWs, and fails to determine a valid association. In addition, it should be kept in mind that most of the SDPs have been in place for a very short period of time, thus programs are too recent to have had an impact on HIV prevalence.

Figure 5.6f: Knowledge and utilization of SDPs among MSWs and HSWs over time



6. TRANSMISSION DYNAMICS

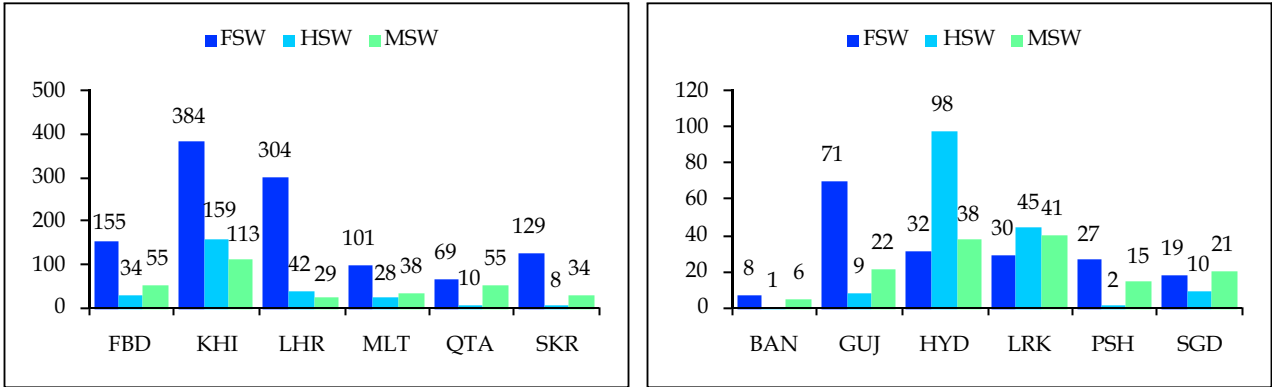
6.1 Bridge Populations

An important consideration for assessing the transmission dynamics and epidemic potential of a country is the size of the key sub-populations, and the number of sexual partners that they have who act as a bridge population to larger and less vulnerable populations. To estimate the size of the potential bridge population for different key sub-populations, the average number of sex partners/month was multiplied by the estimated size of the key population in each of the 12 cities.

A wide variation was observed in the total number of sexual partners within and between cities, which is an important indicator in planning interventions (Figure 6a). In Karachi and Lahore, FSWs reported having approximately 384,000 and 304,000 sexual partners respectively each month, which are considerably higher than the estimated number of partners for HSWs and MSWs (Figure 6.a). Similarly, in Faisalabad, Sukkhr and Multan, FSWs reported more sexual partners than MSWs. In Larkana, Bannu and Sargodha the number of sexual partners among MSWs and HSWs are the same as that of FSWs. In contrast, HSWs in Hyderabad had more sexual partners than both FSWs and MSWs.

The higher risk of HIV transmission in anal sex and the higher prevalence of HIV among the MSW and HSW populations mean that the relative importance of their bridge population is higher than for FSWs, particularly given that 14.8% of MSWs and HSWs are currently married.

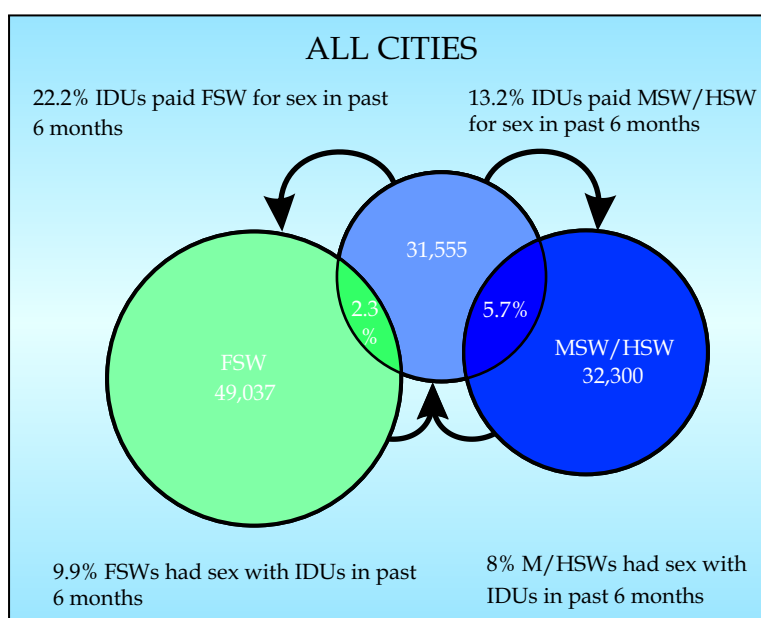
Figure 6a: Estimated number of monthly sexual partnerships among FSWs, MSWs, and HSWs by city (in thousands), 2006-07



7. NETWORK INTERACTIONS

The notion that concentrated epidemics can be self contained within the confines of one particular risk group is not supported by the available data. An important consideration for program strategies is the extent to which the epidemic has potential to rise both within key high-risk populations as well as within the general population due to the sexual networks between the different higher risk sub-populations. In particular, sexual networking between commercial sex workers (i.e., FSWs, MSWs, and HSWs) and IDU sub-populations will increase the epidemic potential, relative to both the sex workers themselves and the general population. The pattern found in many countries is that once the HIV epidemic is well established in the IDU population, this sub-group acts as a “bridge” through which HIV reaches the wider heterosexual population; the greater the overlap between high-risk populations, the quicker the spread of HIV to other groups, and subsequently to the general population. The following analyses provide an indication of the extent to which there is networking between the four key vulnerable sub-populations.

Figure 7a: Interactions between the IDU, FSW, MSW and HSW population, 2006-07



In Pakistan, although HIV infection rates among FSWs remain very low, there is evidence of sexual networking between FSWs and IDUs. Overall, approximately 2.3% of FSWs, and 5.7% of both MSW and HSWs reported that they are also IDUs. About 10% of FSWs, and 8% of MSWs reported having sex with an IDU in the past six months; 22% of IDUs reported having paid FSWs for sex, and 13.2% reported paying a MSW/HSW for sex during past six months (Figure. 7a). The network interaction among the HRGs varies considerably for different cities (Figures 7b), which are as following:

Gujranwala: A large proportion of FSWs reported to have had sex with IDUs, which is consistent with IDU reports of paying FSWs for sex. There was some network interaction between the HRGs reported. About 16% of the IDUs also reported paying MSW/HSWs for sex in past six months.

Karachi: A large proportion of IDUs paid FSWs for sex, however, very few FSWs reported injecting drugs. A modest interaction between the IDUs and MSWs/HSWs was reported.

Lahore: A notable overlap between IDUs and MSWs/HSWs exists in Lahore. Although the overlap between the IDUs and FSWs network is little, a large proportion of both FSWs and IDUs reported having had paid for sex with one another.

Faisalabad: A modest to low degree of overlap between networks was reported between HRGs, with 7.5% of FSWs, and 1.8% of MSWs/HSWs having reported injecting drugs. Thirty-one percent of FSWs reported having sex with IDUs, and 15.8% of IDUs paid FSWs for sex.

Hyderabad: An alarming degree of interaction was reported among the HRGs. Fourteen percent of MSWs/HSWs reported injecting drugs, and 20.6% reported having sex with IDUs. Over half (57.8%) of the IDUs reported having sex with FSWs in past six months.

Sukkur: No FSWs, and 1% of MSWs/HSWs reported injecting drugs. About 14% IDUs reported paying FSWs, and 15% MSWs/HSWs had sex with IDUs.

Peshawar: A small proportion of FSWs and MSWs reported injecting drugs; approximately 13% of FSWs and MSWs/HSWs reported having sex with IDUs. About 17.4% of IDUs reported paying for sex with FSWs, and 13.4% reported paying MSWs/HSWs for sex.

Quetta: A substantial proportion of MSWs/HSWs reported injecting drugs as well as having sex with IDUs in the past six months. A little network interaction between the FSWs and IDUs was reported.

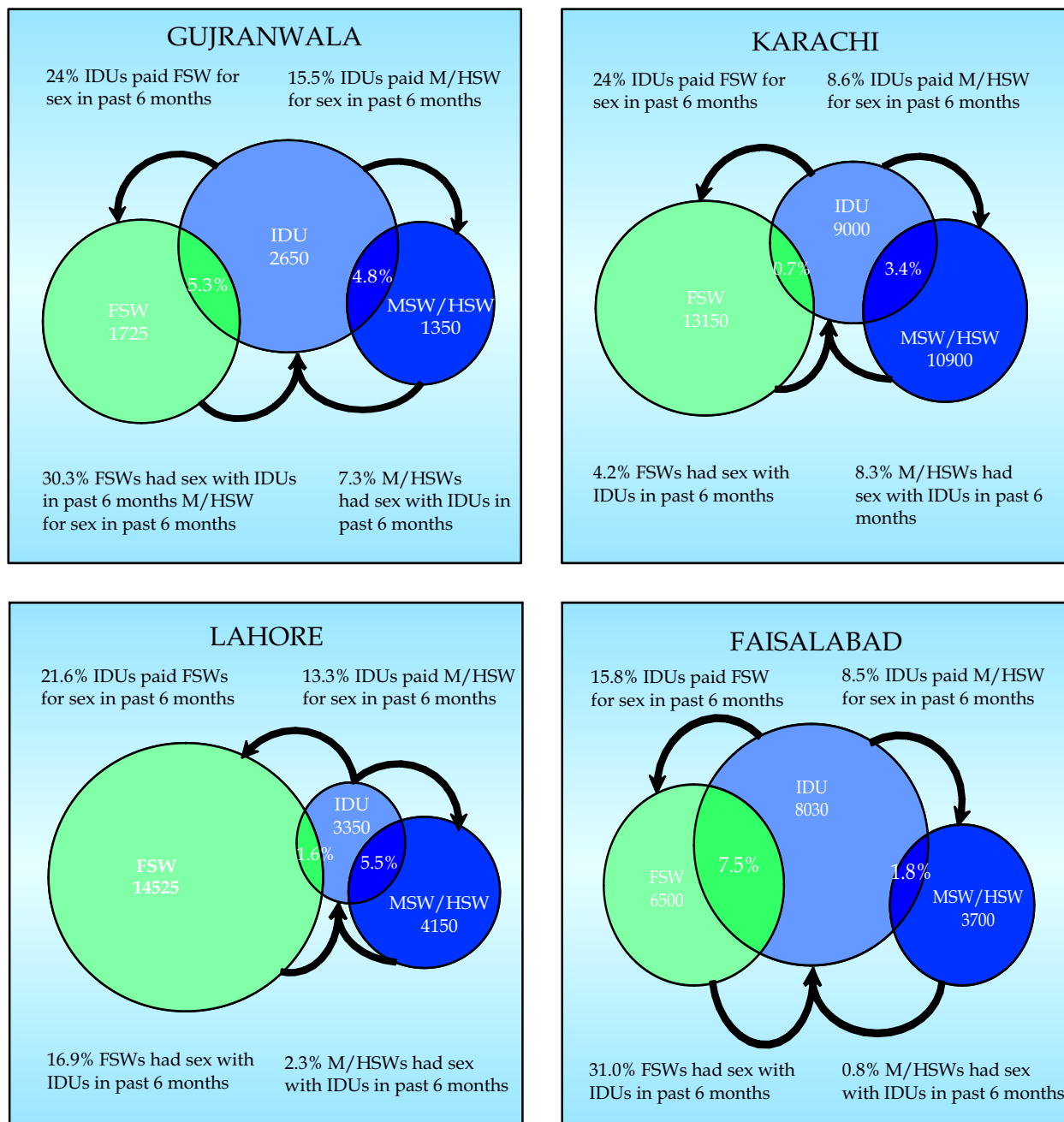
Bannu: A moderate proportion of IDUs reported paying both FSWs (25%) and MSWs/HSWs (26.4%) for sex, although a relatively low proportion of both FSWs and MSWs/HSWs reported sexual interaction with IDUs.

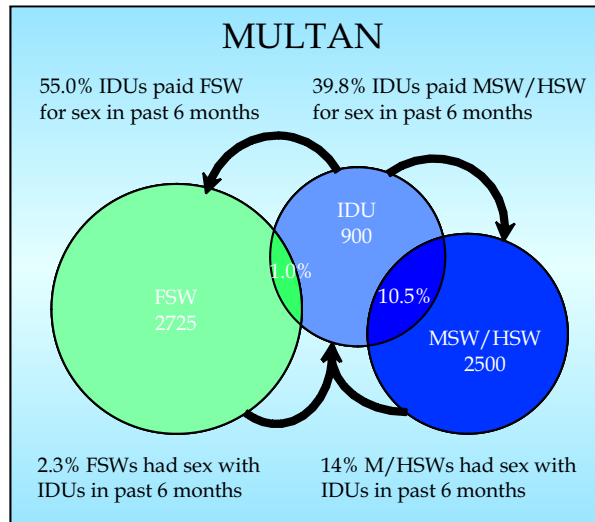
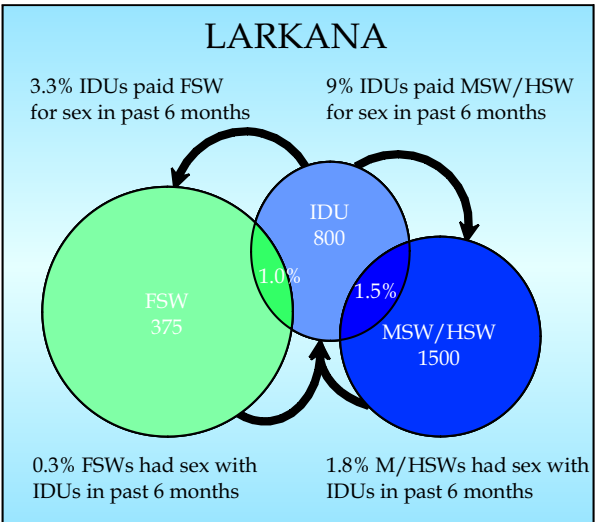
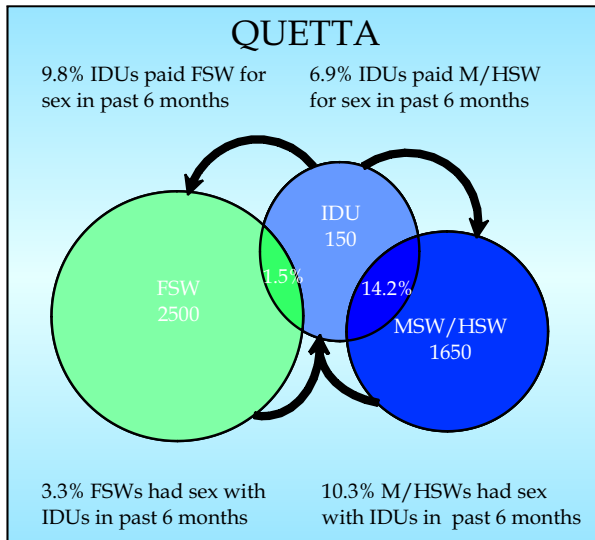
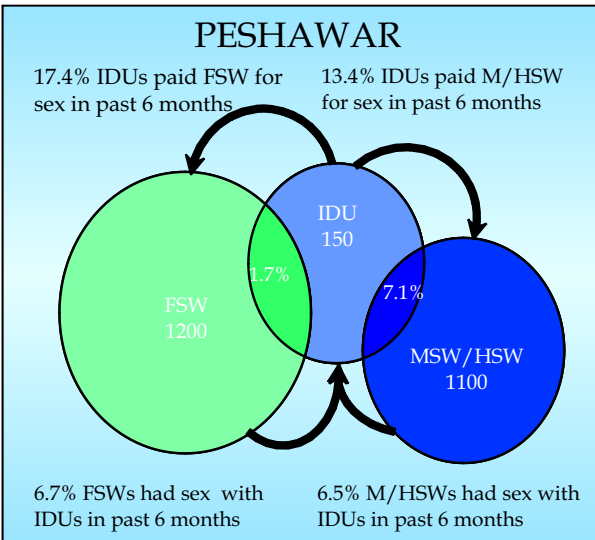
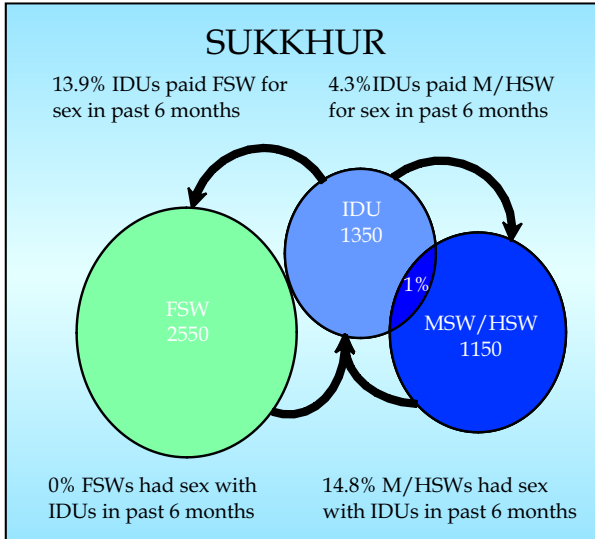
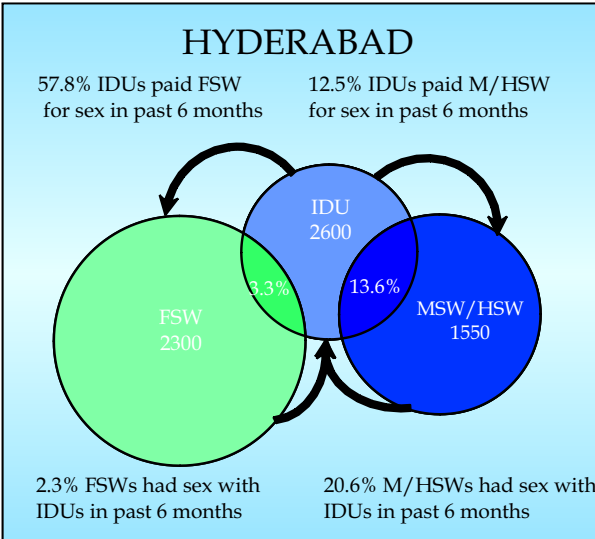
Sargodha: A modest sexual interaction was observed between the IDUs and FSWs with low overlapping and sexual interaction between the IDUs and MSWs/HSWs.

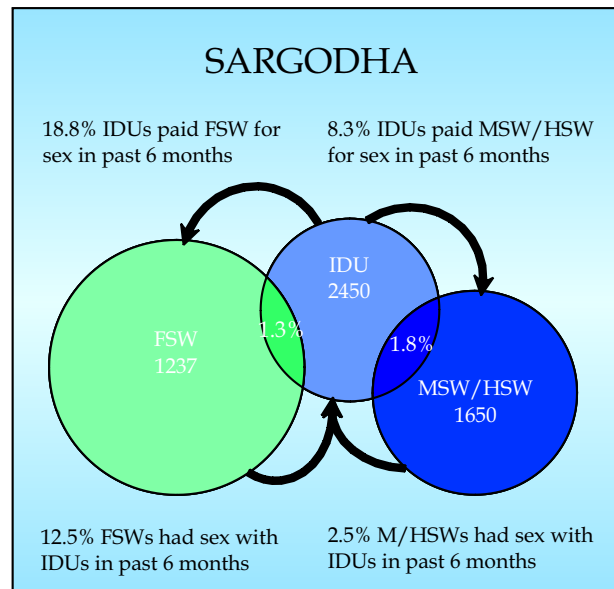
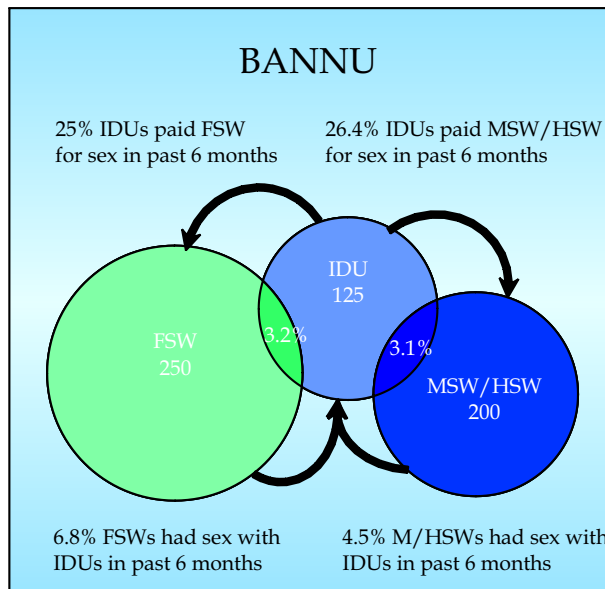
Larkana: The sexual interaction and overlaps reported between the HRGs is low.

Multan: A very large proportion of IDUs reported paying both FSWs (55%) and MSWs/HSWs (39.8%) for sex. Fourteen percent of the MSWs/HSWs reported having sex with IDUs during the past six months. There was a considerable network overlapped between IDUs and MSWs/HSWs in contrast to that of FSWs.

Figure 7b: Interactions between the IDU, FSW, MSW and HSW population by city, 2006-07







Two important points emerge out of this:

1. To effectively control HIV, it is necessary to address all four HRGs since they are all potentially interconnected via risk behaviors that serve as bridges for HIV transmission.
2. The available data (Table 5.5b) suggests that HIV infection in the MSW and HSW groups is not associated with concomitant IDU behavior itself, or with sexual contact with IDUs. This raises the possibility that HIV in IDUs and in MSWs/HSWs are separate epidemics in Pakistan. This question needs more work in order to understand it, and it is an interesting research question that could be addressed, in part, through the phylogenetic analysis of HIV in the HASP samples from these risk groups. This point illustrates the strength of the HASP surveillance system; that the extensive data collected serves not only to describe and monitor trends in HIV in Pakistan, but also serves as a platform to develop more detailed research questions and to begin to address those questions.

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8. SUMMARY & CONCLUSIONS

Evidence from this and the previous surveillance round of 2005 indicate that there are substantial and widespread networks of vulnerable key populations at high risk of acquiring HIV, particularly IDUs and commercial sex workers (female, male and hijra). This reinforces the importance of NACP and PACP's plans to rapidly scale up focused prevention to curtail the growth of the HIV epidemic in these populations, thereby reducing the overall size of the HIV epidemic. There is evidence in this report that the epidemic is expanding in the IDU population in several cities, and the very high prevalence among IDUs in Sargodha demonstrates how explosive HIV epidemics among IDUs can be. Therefore, widespread and intensive efforts are required to bring about broad changes in injecting behaviors among IDUs. This is particularly important considering the overlap between IDU populations and high risk sexual networks apparent in many of the cities. The rising HIV prevalence among IDUs will increase the risk of spill-over into the large high risk sexual networks of commercial sex workers and their clients.

Although HIV prevalence among commercial sex workers remains low, there is evidence that some focal epidemics are emerging. For example, in Larkana where HIV among IDUs emerged relatively early, it is apparent that HIV is becoming established in the male and Hijra sex work networks. It will therefore be particularly important to rapidly implement effective programs to reduce sexual transmission in the male and Hijra sex work networks to curtail further expansion of the HIV epidemics in these groups. It appears that HIV has not yet reached the female sex work networks to a large extent, so there remains an important window of opportunity to further protect FSWs and their partners by scaling up prevention programs. Given the relatively large size of the FSW population, the widespread distribution and the high numbers of partners, keeping the HIV prevalence low in female sex work networks should remain a high priority.

The data from this surveillance round continue to show low levels of awareness about, and participation in, prevention programs. This indicates that the coverage of SDPs needs to be scaled up to reach a larger proportion of these key populations. In addition, it suggests that where there are SDPs, there is scope for substantial improvement in the outreach to, and mobilization of members of these communities. There is a need to scale up interventions, including testing in Pakistan, as evidenced by the fact that only 12.9% of MSWs and 13.6% of HSWs knew of a place where they could be tested for HIV, and the fact that few HRGs know of SDPs or have participated in SDPs' activities. This challenge, among others, will require evolving and innovative strategies, since these populations do not remain static, and the context appears to be changing rapidly. For example, mapping results suggest that IDU populations shift in size and location in response to local factors. Similarly, the context and operation of female sex work appears to be changing rapidly. Compared to 2005, there is evidence of greater dispersion of the FSW populations, with a greater

number of FSWs working on their own through direct telephone contact with clients. This will increase the challenge of reaching FSWs through program outreach, and increase the vulnerability of individual FSWs, if they lose contact with programs and other community members.

In conclusion, it is clear from the data gathered for this report that HIV prevention among vulnerable key populations remains a key challenge for Pakistan's efforts to curtail the HIV epidemic. To do this effectively, it is important that this information is integrated into the planning and delivery of prevention programs, and that those implementing these programs are provided with the capacity to use this information to improve their effectiveness.

