HIV SECOND GENERATION SURVEILLANCE IN PAKISTAN

NATIONAL REPORT ROUND 1
2005

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

Canadian International Development Agency | Agence canadienne de développement international

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Acronyms

AFIP	Armed Forces Institute of Pathology
AIDS	Acquired Immune Deficiency Syndrome
CIDA	Canadian International Development Agency
CS	Cluster Sampling
DBS	Dried Blood Specimen
DHA	Defense Housing Authority
EIA	Enzyme Immunoassay
FSW	Female Sex Worker
GOP	Government of Pakistan
HASP	HIV/AIDS Surveillance Project
Hijra	Eunuch Sex Worker
HIV	Human Immunodeficiency Virus
HRA	High Risk Activity
HRG	High Risk Group
HSW	Hijra Sex Worker
IBBS	Integrated Behavioural and Biological Surveillance
IDU	Injecting Drug User
KI	Key Informant
L1	Level One
L2	Level Two
MSW	Male Sex Worker
NACP	National AIDS Control Program
NGO	Non-Governmental Organization
NWFP	North West Frontier Province
PACP	Provincial AIDS Control Program
PKR	Pakistani Rupee
RDS	Respondent Driven Sampling
RI	Research Institution
SIUT	Sindh Institute of Urology
SRS	Systematic Random Sampling
STI	Sexually Transmitted Infection
TA	Take All
TLCS	Time Location Cluster Sampling
UC	Union Council
VCT	Voluntary Counseling and Testing

Acknowledgements

The Canada-Pakistan HIV/AIDS Surveillance Project (HASP) would like to thank each one of the 8,275 FSW, IDU, MSW and Hijra respondents who participated in this Round at our eight different sites.

The study would not have been possible without the Field Workers and the Social Mobilizers who worked tirelessly in the field against many odds, to map the high risk groups (HRGs) for each city and collect behavioral and biological data.

We would also like to acknowledge contributions of the local NGOs who facilitated access to the HRGs and secured support from local law enforcement agencies and community leaders.

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Dr. Sohail Abbas
Field Director

Foreword

The HIV/AIDS epidemic poses a real threat to the health of individuals, families and communities in Pakistan and to the progress we have made in recent years as a nation. Although we currently face a number of difficult challenges in our development, including conflict and natural disasters, paying insufficient attention to the warning signs presented by the growing HIV/AIDS epidemic in Pakistan could cost us dearly in the long-term. The increasing level of HIV among high risk vulnerable groups indicates that the epidemic in the country has shifted from low level to "concentrated" among Intravenous drug users especially in the provinces of Sindh and Punjab, raising significant conceptual, ethical and programmatic issues. Prompt and targeted interventions are required to contain the epidemic before it spills over to the general population. Being cognizant of the complexity of the epidemic, there have been significant changes in the policy frameworks and approaches of the NACP.

In support of the GoP's commitment to a new National Health Policy (2001) and Poverty Reduction Strategy Paper that gives important focus to HIV/AIDS and the broader Enhanced Program, the Canadian International Development Agency (CIDA) supported Canada-Pakistan HIV/AIDS Surveillance Project for the establishment of an effective national HIV/AIDS surveillance system in Pakistan. HASP is an integral part of the overall Enhanced Program, which operationalizes the "Second Generation Surveillance and Operations Research" sub-component under the Enhanced Program.

The 1st Round Integrated Biological and Behavioral Surveillance report provides a national level analysis of the epidemic trends among these sub-populations, with the objective to help plan and implement evidence based effective programs and policies to reduce HIV transmission in these groups, and in the wider population.

This report is the result of unfaltering dedication, hard work and commitment of a large number of people, organizations and institutions. I would like to acknowledge the efforts and devotion of the Agriteam and HASP team in making this a reality. I would also like to acknowledge the contributions of the representatives of NACP, PACPs, Research Institutes, NGOs, SIUT, AFIP and the laboratory representatives without whose effort this work could not have been possible. And last but not the least I would like to thank all the respondents who participated in this survey. Dr. James Blanchard deserves special mention for writing such a useful report which will serve as a guiding light for future programme directions. I deeply appreciate the guidance and support provided by the Canadian Project Director, Ms. Merydth and all the Technical members of the Agriteam. The unfaltering support provided by CIDA is greatly appreciated as without their contribution this work could not have been possible.

Dr. Asma Bokhari
National Programme Manager
National AIDS Control Programme

Executive Summary

In 2005, a rapid geographically specific mapping study was conducted in eight cities of Pakistan to estimate the size, location and operation typologies of four key sub-populations: female sex workers (FSWs), male sex workers (MSWs), Hijra or transgender sex workers (HSWs) and injecting drug users (IDUs). The eight selected cities were Karachi, Lahore, Faisalabad, Multan, Hyderabad, Sukkur, Peshawar and Quetta. The mapping study was followed by a cross-sectional behavioural and biological survey of these key populations that focused on collecting information on their socio-demograpic characteristics, sexual and other risk behaviours, and HIV prevalence. The mapping data and diverse sampling techniques were used to draw representative samples of the key populations in each city.

Survey data were collected by a trained interviewer and divided into two parts. First, behavioural data was gathered using a structured questionnaire covering socio-demographic information and risk behaviour indicators identified from the literature on HIV including profession related variables, risk behavior & practices, and knowledge of HIV and STIs. Informed consent was always obtained prior to conducting interviews. Second, biological data was 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 questionnaire and drawing of biological sample to answer participant queries. Information on HIV prevention and available services including voluntary counseling and testing (VCT), primary health care and specified service delivery packages for the high risk groups was also provided.

In the eight cities mapped, the total estimated number of FSWs is approximately 35,050, the combined number of male sex workers (MSWs) and Hijra sex workers (HSWs) is estimated to be approximately 25,870, and the number of injecting drug users (IDUs) is estimated to be 24,390. Lahore has the highest per capita number of FSWs with 12.6 per 1,000 adult women (aged 15 to 49) and 11.4 FSWs per 1,000 adult men (aged 15 to 49). Faisalabad had the lowest relative FSW population with 4.6 per 1,000 women and 4.2 per 1,000 men. Among MSWs and HSWs, the highest relative population is in Multan with 6.3 (each) per 1,000 men, while Lahore has the fewest at 1.0 and 0.9 per 1,000 respectively. Finally, Faisalabad has the highest number of IDUs per capita with 10.8 per 1,000 adult men. Quetta and Peshawar have the fewest with 1.1 and 1.2 per 1,000 men respectively.

Although overall HIV prevalence is low, risk behaviours are widespread in all of the key sub-populations. The average prevalence of condom use among FSWs, MSWs and HSWs over the last month is 18%. Interestingly, despite the fact that brothel-based FSWs account for only 2.2% of all FSWs, they report the highest levels of regular condom use (64%) and 50% were carrying a condom at the time of the survey. A second outlier for FSWs is Lahore which reports 42% condom use and an average of 62% usage with their last client. Among both MSW and HSWs, Quetta had the highest consistent condom use (avg. 21%) and the highest number of MSWs and HSWs carrying a condom at the time of the survey (avg. 20.5%). Interestingly, FSWs reported the lowest levels of condom use in Quetta. Condom use is also higher (by more than 50%) among FSW secondary school graduates. While a similar pattern is seen among Hijira sex workers (45% higher), this is not the case for MSWs, among whom graduates report lower condom use than those who less educated.

In terms of HIV knowledge, brothel-based FSWs reported greater HIV prevention knowledge and

service delivery program participation than all other sex workers combined, perhaps reflecting greater exposure to prevention programs. IDUs demonstrated reasonably high levels of knowledge, but low participation in prevention programs. The prevalence of high risk injection practices is high, with only 22% of IDUs reporting that they always use new needles and syringes for injection. While some cities such as Peshawar (55%), Lahore (45%), and Quetta (43%) rank significantly higher in the frequency of using clean needles/syringes for drug injection, across seven cities in all provinces, 35% of IDUs reported injecting with a used needle at their last injection, nearly half reported passing a used needle/syringe and 42% of IDUs under 20 years injected with a used needle/syringe.

A. Introduction

The National AIDS Control Program (NACP) was first established in Pakistan in 1988 with the objective to reduce HIV transmission through the promotion of a safe blood system, prevention and treatment of Sexually Transmitted Infections (STIs), and raising public awareness of HIV/AIDS. This strategy has included the establishment of basic sentinel surveillance, training of health staff, research and behavioural studies, and development of program management. The Government of Pakistan (GoP) is fully aware of the growing challenge of HIV/AIDS and its implications for the population, and through the NACP in the last few years has been proactive in taking advantage of the current window of opportunity presented by the relatively early phase of the epidemic. Accordingly, in early 2001 a National HIV/AIDS Strategic Framework was developed and adopted to guide the activities of HIV/AIDS stakeholders in Pakistan. To implement this strategy, the GoP negotiated with the World Bank to support the framework Expanded Response to HIV/AIDS Enhanced HIV/AIDS Control Program (hereafter the Enhanced Program).

In support of the GoP's commitment to a new National Health Policy (2001) that gave important focus to HIV/AIDS and the broader Enhanced Program, the Canadian International Development Agency (CIDA) developed the Canada-Pakistan HIV/AIDS Surveillance Project (HASP) to provide assistance for the establishment of an effective national HIV/AIDS surveillance system in Pakistan. HASP is an integral part of the overall Enhanced Program, which operationalizes the "Second Generation Surveillance and Operations Research" sub-component under the Capacity Building and Program Management component of the Enhanced Program. HASP is working to strengthen and expend the existing NACP surveillance and monitoring system based on the principals of second generation HIV/AIDS surveillance, in order to ensure that behavioural and serological surveillance activities are conduced regularly in a scientific and cost-effective manner, and that the information generated is then analyzed and utilized. Through these efforts, HASP is enhancing the ability of the GoP to develop effective polices and programs to control and prevent the spread of HIV/AIDS.

A key component of the HIV surveillance activities undertaken through HASP is a comprehensive assessment of the size, socio-demographic characteristics, behaviours and HIV prevalence in key sub-populations who are at higher risk of HIV and form an important part of the transmission networks through which HIV epidemics can emerge. In Pakistan, the key sub-populations that have been identified include commercial sex workers (female, male and hijra) and injecting drug users. Accordingly, in late 2005 HASP conducted the first major assessment of these sub-populations in eight cities across all four provinces. The assessment included a rapid mapping study to estimate the size, typology and locations of key populations and a behavioural and biological survey of these sub-populations to better understand their socio-demographic and behavioural characteristics and to assess the current HIV prevalence in these groups. Previously, data from this survey has been presented at the provincial level. This report provides a national-level analysis of the first full survey round with these sub-populations, with the purpose of presenting key findings to help plan and implement effective programs and policies to reduce HIV transmission in these groups, and in the wider population.

B. Methods

B.1 Overview

An assessment was made of four key sub-populations in eight cities across four provinces of Pakistan: 3 in Sindh, 3 in Punjab, 1 in NWFP and 1 in Balochistan. The key populations included female sex workers (FSWs), male sex workers (MSWs), Hijra[a] sex workers (HSWs) and injecting drug users (IDUs) (see Box 4 below for definitions of these sub-populations). There were two main data gathering activities: i) Mapping and, ii) Integrated Behavioural and Biological Surveys (IBBS).

The purpose of mapping was to estimate the size, distribution and basic operational typology of these key sub-populations in each city. The mapping methodology is described in B.2. Mapping Methodology. Briefly, mapping consisted of segmenting each city geographically, and within each geographic segment interviewing key informants to obtain information about the location and size of the key sub-populations. Once this first level information was obtained, a second level of data collection was done with primary key informants (i.e. FSWs, MSWs, HSWs and IDUs) at the main sites mentioned to verify and update the information provided by the key informants and to identify key locations or spots that were not obtained at the first level of key informant interviews. Thus, the data obtained from this rapid mapping exercise included:

1. A list of locations and specific sites where key sub-populations operated or could be found
2. An estimate of the size of each key sub-population according to typology (e.g. brothel-based, home-based, etc.)

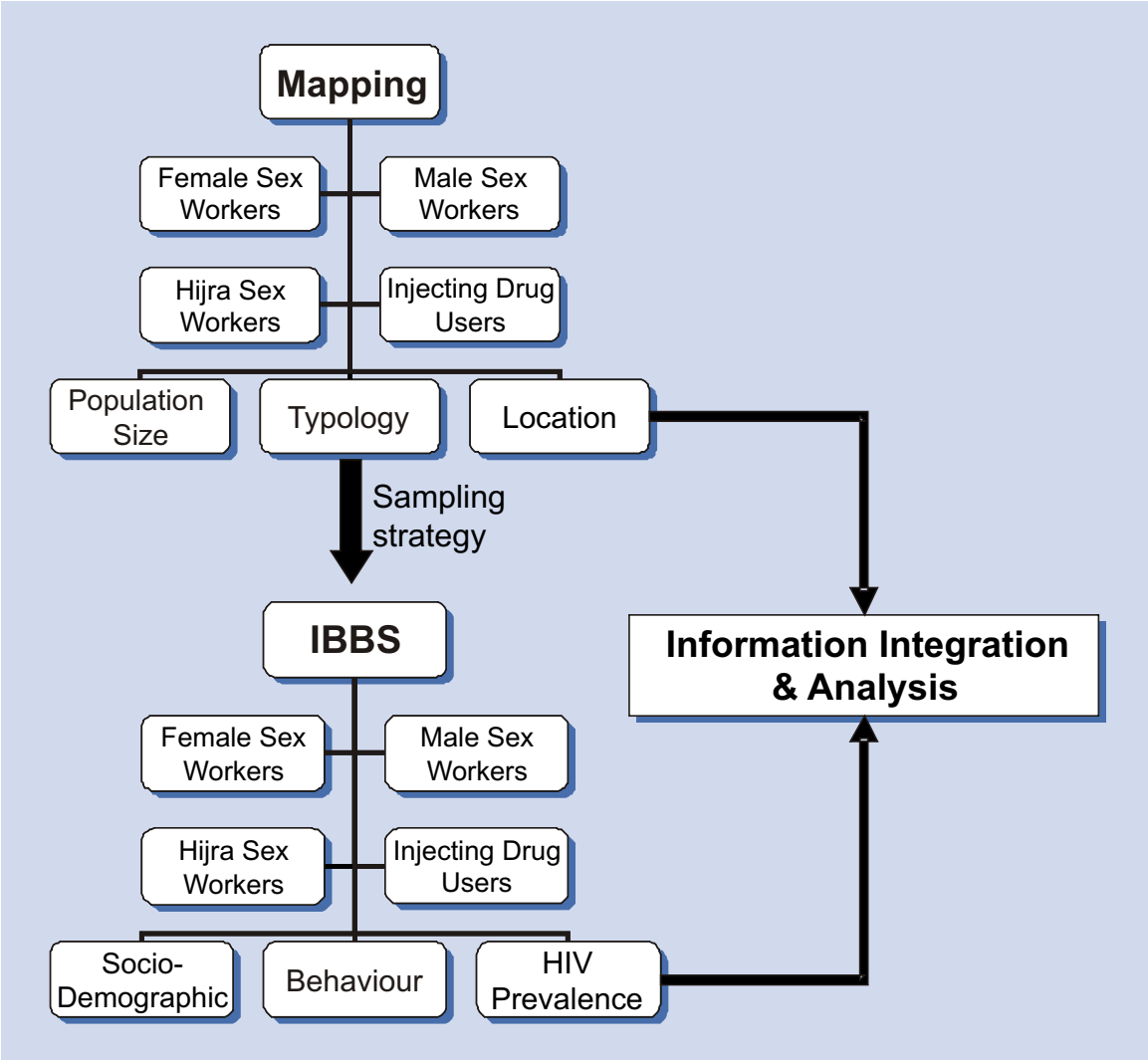
The second main information gathering activity was an integrated behavioural and biological survey of the key sub-populations. This consisted of face-to-face interviews and collection of a blood sample (dried blood specimen or DBS) for HIV testing from key sub-population members. The data from the mapping was used to draw up a sample of key sub-population members that was representative with respect to geographic location and typology (i.e. brothel-based, home-based, public places, etc.). So in each city, sample quotas for each geographic area and typology were based on mapping estimates. The actual sample selection employed three techniques:

1. Time-location cluster sampling, to draw samples from populations that were found in identifiable public places
2. Respondent-driven sampling, 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 such that a stable sampling frame could be constructed

Where the estimated population size was very low, a "take all" approach was adopted.
The following diagram summarizes the data collection methods, and the link between mapping and the IBBS data collection.

[a] 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 transsexual.

Figure B1.1 Illustration of the data collection methods used



B.2 Mapping Methodology

A geographical mapping approach was followed to collect data for HIV/AIDS high risk activities (HRA) and placing it on a geographical map. Box 1 presents the key objectives of the mapping study. In epidemiological terms the study was a cross sectional survey to identify the locations of HRA for HIV/AIDS. The study also determined estimates of individuals involved in these activities by interviewing key informants. 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. High risk activities for HIV/AIDS 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). The entire 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 1. Objectives of Mapping

Following were the objectives of the mapping study:

- To identify locations where key populations engaging in HRA operate, and can be reached
- To gather basic information on the organization of HRA
- To generate estimates of the number of participants in HRA
- To prepare a list of contacts that can lead access to participants of HRA

B.2.1 The pre-mapping exercise

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

- Detailed maps of the target cities were acquired.
- Each city was divided into zones based on the administrative units: Union Councils (UC), each zone comprised of three to four UCs. The only exception was Karachi where the 18 towns, including Defense Housing Authority (DHA), were used as zones (CANTT areas were not included in the study). See Table B.1.
- Members of the field teams were recruited based on their past experience working with vulnerable and/or HRGs as well as experience in mapping studies.
- All field staff attended a three to four day basic training workshop on the basic concepts of HIV/AIDS and the mapping methodology.
- The key terms, concepts and definitions used in this exercise were finalized along with social mobilizers and local stakeholders.
- Due to the legal vulnerability of the target groups, protection from law enforcement agencies was needed for the field team. Official identity cards were issued for all data collection and field staff by the Provincial AIDS Control Programs (PACPs).
- Local stakeholders (e.g. legal and order 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 was developed to complete the data collection activities within the designated time frame.

B.2.2 Level1 activity

Level 1 focused on collecting information about HRA in various geographical locations in each zone, and recording that information in a pre-designed format. The format gathered information from secondary and tertiary key informants (KIs) on the key geographic locations where HRA was found along with its typology. Estimates (minimum and maximum) of HRG involved in HRA were also collected for each spot. A description of different KIs is provided in Box 2. A varying number of interviews were conducted in each zone to arrive at a list of spots. The distribution of zones, number of L1 & L2 interviews in each target city is provided in Table B.1.

Followed by field activity, the whole field team re-convened everyday to collate the data collected in the field. Data were manually edited and the information was further sorted into various tables which served as a foundation to for the next level of activity. Based on the information assembled, a fixed number of spots for each HRG in each zone, were selected for detailed spot profiling in the final step.

Box 2. Key Informants and Network Operators

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

- **Primary Key Informants:** Persons engaged in HRA themselves, e.g. 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 high risk activity in a professional capacity, e.g. police, STI service providers, and NGO workers

Table B1.1 Number of mapping zones and L1 and L2 KI Interviews, by city

	Karachi	Hyderabad	Sukkur	Lahore	Faisalabad	Multan	Peshawar	Quetta
Number of Zones	18	11	5	40	18	20	20	6
# of L1interviews	-	287	276	4047	1905	3330	1127	803
# of L2 interviews	552	116	203	1574	1905	1083	597	475

B.2.3 Level2 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 key informant and focused on validating the information collected and collated in the previous exercise.

Data triangulation

Multiple approaches were followed to triangulate the data. Meetings with law enforcement agencies were held and estimates from members of the local police in selected towns were obtained. These estimates were compared with the estimates generated from the mapping exercise and no substantial differences were noted. In addition, focus group discussions were conducted with network operators (e.g. pimps, madams, aunties, etc.) to verify the estimates of Kothikhana[b] and street based FSWs as well as specific locations and spots.

[b] "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.

Box 3. Mapping of the Brothel areas

An additional methodology was used to assist in mapping brothels. This entailed conducting a census of all the brothels in Karachi, Lahore, Multan and Hyderabad. Using Circle Level maps from the Population Census Office, the red light areas in the target cities were demarcated. Every structure with in this demarcation was visited and a KI from that structure was asked if any brothels existed within. All structures that were identified as having brothels were surveyed. Each apartment/room was surveyed for brothel based sex work and a head count of all sex workers in each was carried out.

B.2.4 Data management

Forms were edited by the data management team and corrected for names of zones, missing KI typology, and any missing estimates of spots, (i.e. spot without any estimates of key sub-population size). All fields were checked for legibility. Forms without estimates of spots were rejected.

The data were entered into a database specifically designed for the study. The data were only used for generating final estimates and lists of spots. To obtain this, the estimate ranges for each site and location were rolled up for a zone and city to produce minimum and maximum estimates. To arrive at a single "best" estimate, the mid-point ("mean") of the minimum and maximum estimates was used.

B.2.5 Organization & monitoring of field work

Although the number of field teams varied at different locations, a uniform general team structure was maintained. The data were collected by trained teams, comprising of a senior and a junior field workers/interviewers. The teams were accompanied by social mobilizers in L2 and at the level of Triangulation. The teams were supervised by team supervisors, who reported to the co-investigator or the site coordinator. In addition to the field teams, a data management team comprising of a data manager and data entry operators was also put into place. In addition to the technical staff and the team leaders, field supervisors were permanently recruited to monitor the field work by visiting all the field teams at least once a day. Field staff was provided with mobile phones to stay in a constant contact with the field supervisors. The monitoring process was so designed as to provide assistance to the field staff rather than be of a policing nature. In addition a study coordinator from HASP was also recruited at each site, to facilitate the study. Random spot checks by various senior members of the team, HASP, NACP and PACPs ensured adherence to the protocol.

B.3 Integrated Biological and Behavioural Surveys (IBBS)

B.3.1 Study period and population

A cross-sectional behaviour survey was conducted between November 20th and December 30th, 2005. Based on the results of the mapping study, FSWs were further categorized according to place of high risk activity (HRA) into (i) Kothikhana based, (ii) home based, (ii) brothel based, and (iii) public place based sex workers. IDUs were also categorized according to place of HRA into (i) home based, and (ii) street based. It should be noted that the biological and behavioural survey of IDUs did not include Karachi in this round because they had been recently surveyed as part of a pilot study by HASP.

Box 4. Eligibility Criteria for IBBS Participation

Injection drug users (IDU)

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

Exclusion Criteria:

- Age under 18 yrs.
- 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.)
- Not willing to participate in the study/unwilling to provide informed consent.

Female sex worker (FSW)

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 or home.

Exclusion Criteria:

- Age : under 15 yrs or over 45 yrs
- Not willing to participate in the study/ unwilling to provide informed consent.

Male sex workers (MSW)

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.

Hijra sex workers (HSW)

Inclusion Criterion: Any trans-gendered individual 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.

B.3.2 Sampling methodology & recruitment

A sampling approach, based on probability sampling, was devised and multiple sampling techniques were combined for different groups to obtain a 'representative' sample of the study population. Since probability sampling requires a sampling frame, a comprehensive and extensive mapping study was conducted to develop sampling frames for the population under study. In addition to identifying the geographical sites and 'hot spots' the mapping study also helped identify the typologies of HIV risk activities which formed the basis of their differentiation into subgroups. Based on the typology, estimates were derived for each subgroup as it was an integral part of the mapping exercise and were used for proportionate allocation of the sample into various subgroups (e.g. FSWs were divided into three subgroups). The sample of 400 FSWs was distributed among the three identified sub-groups, proportionate to size. Brothel based FSWs were selected through systematic random sampling (SRS) (i.e. systematic sampling from a list of FSWs using a random start), street based FSWs through multistage cluster sampling (CS) and kothikhana/home based FSWs through respondent driven sampling (RDS). For reaching the most hidden group of MSWs, RDS was used in all cities, while Hijras were recruited through CS. Finally, IDUs were recruited through time-location cluster sampling (TLCS). For any group where the estimates were low, a "take all" (TA) approach was used. The table below gives the sample collected for each HRG and the sampling modes adopted for selection of samples by city.

Table B1.2 HRG sampling mode and sample size, by city

HRG/Sampling Strategy	Punjab			Sindh			NWFP	Baloch-istan	Total sample
	Lahore	Fsd	Mtn	Khi	Hyd	Suk	Pesh	Qta	
FSW	**400**	**400**	**400**	**400**	**400**	**368**	**359**	**411**	**3228**
Brothel	100	-	14	50	40	-	-	-	204
Sampling mode	SRS	-	TA	SRS	SRS	-	-	-	
Street	150	230	188	125	122	80	51	299	1245
Sampling mode	TLCS	TLCS	TLCS	TLCS	TLCS	TLCS	CS	CS	
Kothikhana/ home	250	170	198	225	228	288	308	112	1779
Sampling mode	RDS	RDS	RDS	RDS	RDS	RDS	CS	RDS	
MSW	**200**	**200**	**200**	**200**	**203**	**169**	**200**	**209**	**1581**
Sampling mode	RDS	RDS	RDS	RDS	RDS	RDS	RDS	RDS	
HSW	**200**	**200**	**200**	**200**	**199**	**185**	**99**	**187**	**1470**
Sampling mode	TLCS	TLCS	TLCS	RDS	RDS	RDS	TA	TA	
IDU	**400**	**400**	**400**	**-**	**398**	**402**	**284**	**147**	**2431**
Sampling mode	TLCS	TLCS	TLCS	-	TLCS	TLCS	TA	TA	
Total	**1200**	**1200**	**1200**	**800**	**1200**	**1124**	**942**	**954**	**8620**

B.3.3 Sample size

A target sample size of 400 was set for each of the main key sub-population groups (male and Hijra sex workers were combined) in each city. The rationale for this sample size was to ensure adequate statistical precision to compare key behavioural characteristics and HIV prevalence of the key population groups between cities and over time. For example, a sample size of 400 provides sufficient statistical power for the following analyses:

- To measure the prevalence of a characteristic with a precision of plus or minus 5% for a characteristic that is present in 50% of the population
- 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 the HIV prevalence with a statistical 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%

B.3.4 Questionnaires

Data were collected by trained interviewers using a structured questionnaire to gather information on various socio-demographic and personal characteristics of the individual. In addition a core list of various risk behaviour indicators identified from the literature on HIV was used to monitor the behavioral patterns in these populations. The key variables for which information was collected are as

follows:

- **Socio-Demographic variables:** age, sex, education, living arrangements, family information, income, migration status, employment and professional background, etc.
- **Profession related variables** (especially for sex workers): category of worker, place of sex work, number of clients and 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, etc.
- **Sexual Risk behaviors:** age at initial sexual intercourse, number of sexual partners, regular and causal partners, condom use, anal/oral intercourse, etc.
- **Knowledge and Information about HIV and other STI's:** information about HIV/AIDS, routes of its transmission, methods to prevent transmission, perception of self risk, etc.
- **Others:** donation of blood, health seeking behavior, available health services and its utilization, etc.

B.3.5 Training of data collection team

All core staff initially attended a three day basic training workshop on IBBS and Data Collection, in which master trainers for all field sites were trained. Formats prepared for data collection were shared and tested during this training exercise. The master trainers, along with HASP staff further provided training to the field team on various aspects of fieldwork in a three day training workshop that focused on providing information and clarifications to the interviewers on:

- understanding HIV/AIDS: facts and myths
- basic interviewing skills, and emphasis on how to interview about sex and drug issues
- sex, gender and HIV/AIDS and the importance of collecting and analyzing sex-disaggregated data
- accessing vulnerable groups
- subject selection and recruitment process
- explaining the rationale and objectives of the study to the subjects
- ethical issues including confidentiality and obtaining informed consent
- biological sample selection methods
- debriefing and referral process
- data management

B.3.6 Field data collection

a) Informed Consent

Once selection of a study subject was done, s/he was taken to the interviewer. Prior to commencing the interview, interviewers first confirmed participants' eligibility and then read aloud a standardized consent form to the participants. This consent form provided participants with an overview of the study objectives, stressed the confidential nature of the interview, the right of participants to respond to

questions, as well as right of participants to end the interview at any time. Written consent was not sought in order to maintain participant confidentiality. Table B1.2 lists the number of refusals.

Table B1.3 Number of refusals, by province

Province	Number of Refusal
Sindh	35
Punjab	73
NWFP	39
Balochistan	0
Total	**147**

b) Administering the Questionnaire

Once informed consent was obtained, the questionnaire was administered and biological samples taken.

c) Debriefing and Referrals

A debriefing session was held with the participants on completion of the questionnaire and drawing of biological samples. The interviewers and senior staff responded to participants queries. Participants were provided with information on modes of prevention and spread of HIV infection, and available services including primary health care and specified service delivery packages for the HRG. Since the results of sero-status were not provided to the study subjects through this study, they were referred to available voluntary counseling testing (VCT) centers.

d) Biological sample collection:

The capillary "Dried Blood Specimen" (DBS) methodology, for collection of biological samples was selected for second generation surveillance because:

- Its relative ease of collection
- No special requirements for storage and shipping
- Methodology has been successfully used elsewhere in similar studies
- 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

The collection of the DBS involved the use of a lancet device that automatically retracts so that accidental skin punctures are virtually impossible. The interviewers were trained in DBS collection and infection control processes. Appropriate infection control measures were followed during the procedure and to clean up any spills

e) Specimen handling, collection, shipping and storing etc:

Blood spots were dried and stored at room temperature in sealed specimen bags after codes were clearly written on the samples with permanent markers. The specimens were handed over to the team leaders on a daily basis by the data collection staff responsible to transport the samples to the relevant laboratory for testing.

B.3.7 Laboratory methods

Sindh Institute of Urology (SIUT) Karachi and Armed Forces Institute of Pathology (AFIP) Rawalpindi were selected through a competitive process to provide technical support for HIV testing for HASP. All DBS specimens were screened by a screening EIA (Enzyme immunoassay or ELISA); HIV Genetic Systems rLAV EIA (Bio-Rad USA) (in single wells). Samples that tested positive by the screening test were tested in duplicate wells by the second EIA (Vironostika HIV Uni-Form II; Biomeriux, The Netherlands). Specimens positive by the second EIA were confirmed by the Western Blot (Genetic Systems HIV-1 Western Blot; Bio-Rad USA). .

B.3.8 Ethical review

The surveys conducted by HASP and described in this report were 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 participation. The level of appropriate compensation for each sub-population was based on consultations with community members, with the objectives of ensuring fairness.
- ***Confidentiality*** Considerable effort was taken to maintain the confidentiality of participants. This included non-disclosure of who participated, and using a non-identifying coding system to maintain study data. Only study personnel who needed to access study records have access to them.
- ***HIV Test Results*** The HIV testing procedures were designed for survey purposes, and not for providing HIV diagnostic results to participants. HIV test results were kept confidential from study personnel and were not provided to participants. Instead, participants were advised that if they wished to know their HIV status the study personnel would facilitate this access through an official HIV counseling and testing service.

The study protocol was reviewed and approved by the ethical review board of the Public Health Agency of Canada.

C. Results

C.1 Female Sex Workers

C.1.1 Population size, distribution and typology

In the eight cities mapped, the total estimated number of female sex workers (FSWs) was approximately 35,050, with a range of 30,300 to 39,800. Table C1.1 shows the estimated number of FSWs for each city mapped in Round 1. The largest estimated FSW population was in Lahore with almost 14,150, followed by Karachi with approximately 11,550. Since the total population of these cities differ substantially, it is important to also assess the size of the FSW population relative to the adult population. In this regard, Lahore had the highest per capita number of FSWs with 12.6 per 1,000 adult women (aged 15 to 49) and 11.4 FSWs per 1,000 adult men (aged 15 to 49). Faisalabad had the lowest relative FSW population with 4.6 per 1,000 women and 4.2 per 1,000 men. Overall, across all of these cities there were an estimated 7.8 FSWs per 1,000 women and 6.8 per 1,000 men.

Table C1.1 Estimated population size of FSWs in 8 cities of Pakistan, 2005

City	Estimated number of Female Sex Worker			Mean FSWs per 1,000 adult women	Mean FSWs per 1,000 adult men
	Minimum	Maximum	Mean		
Karachi	10,200	12,900	11,550	5.8	5
Lahore	12,100	16,200	14,150	12.6	11.4
Faisalabad	1,600	2,500	2,050	4.6	4.2
Multan	2,000	3,000	2,500	9.9	8.7
Hyderabad	1,500	1,200	1,350	6.9	6.2
Peshawar	800	1,100	950	4.5	4
Sukkur	1,500	2,000	1,750	8.8	7.8
Quetta	600	900	750	6.4	5.3
Total	**30,300**	**39,800**	**35,050**	**7.8**	**6.8**

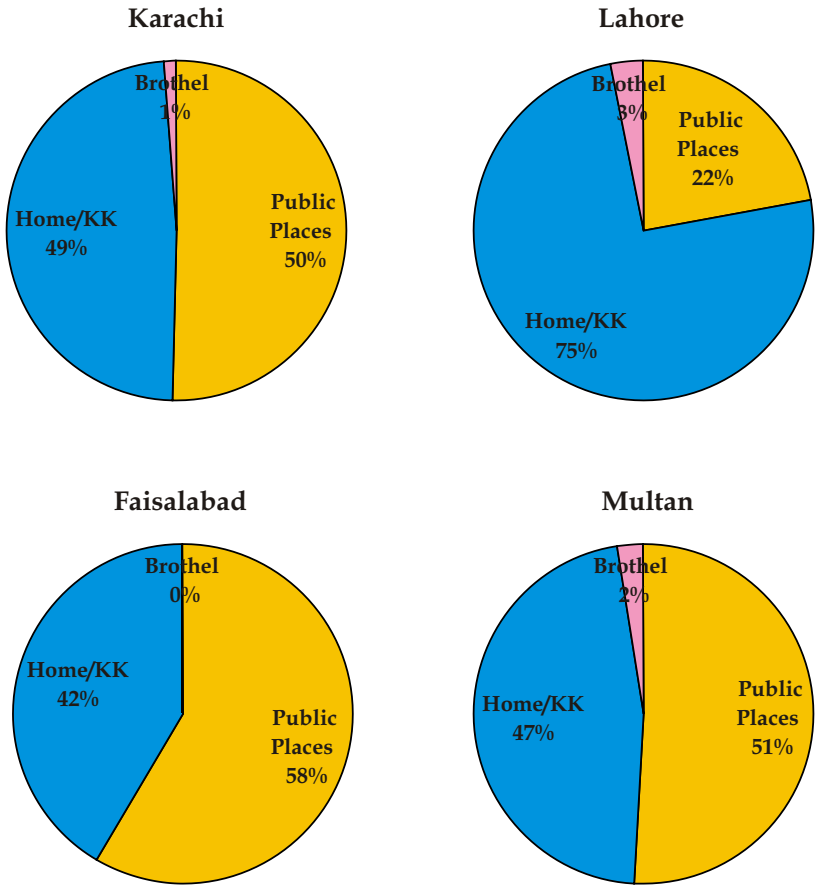
The majority of the FSWs (57.4%) in these eight cities work out of homes or "kothikhanas", followed by public places[c] (Table C1.2 and Figure C1.1). The distribution of FSWs differs between cities. For example, the large majority of the FSWs in Lahore are based at home, whereas a substantial proportion of FSWs in each of the other cities work from public places. Brothel-based FSWs were found only in four of the cities, and represent a small minority in each of those cities (see Table C1.2 and Figure C1.1).

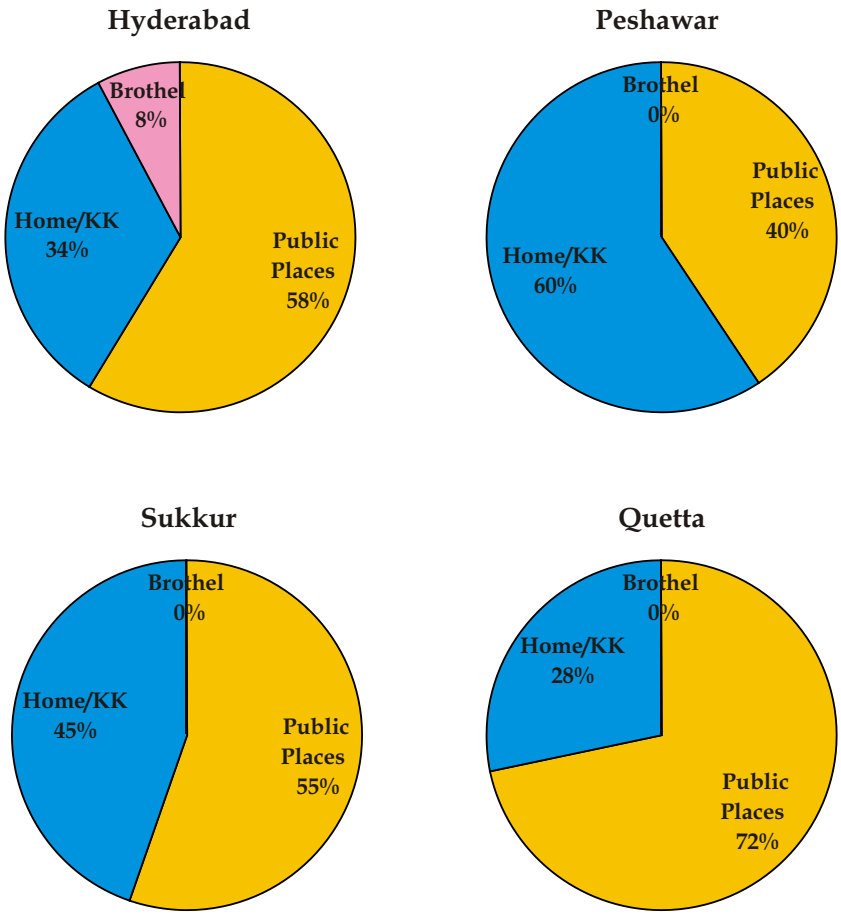
[c] "Public places" refer to the locations where these FSWs solicit clients, and includes open areas such as along streets and at intersections and in public venues such as bus and train stations.

Table C1.2 FSW population by location in 8 cities of Pakistan, 2005

City	Public Places	Home or Kothikhana	Brothel	Total	FSWs per 1,000 adult men
Karachi	5,800	5,600	120	11,520	5
Lahore	3,100	10,600	450	14,150	11.4
Faisalabad	1,200	850	0	2,050	4.2
Multan	1,300	1,200	60	2,560	8.5
Hyderabad	1,000	600	140	1,740	6.2
Peshawar	400	550	0	950	4
Sukkur	950	750	0	1,700	7.8
Quetta	550	210	0	760	5.3
Total	**14,300 (40.4%)**	**20,360 (57.5%)**	**770**	**35,430**	**6.8**

Figure C1.1 Distribution of FSWs by location in 8 cities of Pakistan, 2005





C.1.2 Socio-demographic characteristics of FSWs

The main socio-demographic characteristics of FSWs are summarized in Table C1.3. Across all cities the average current age of FSWs was 27.6 years, with little variation between different types of FSWs. Overall, 10.9% of FSWs are aged 15-19 years, with the highest proportion of FSWs who are less than 20 working out of brothels (15.2%). Overall, FSWs have been working as a sex worker for an average of 5.4 years, beginning on average at just over 22 years of age (Figure C1.2). FSWs who work in brothels initiated sex work at a substantially younger age (average 17.9 years), and had worked for longer (average 9.0 years) than other types of sex workers. FSWs in Multan and Sukkur tended to be younger (average 24.6 and 25.9 years, respectively), and started at a younger age (average 19.1 and 20.4 years, respectively) than those in other cities (see Figure C1.3). Almost 50% of FSWs in Multan are aged less than 25 years, with the percentage in other cities ranging from 22.3% in Peshawar to 41.0% in Sukkur (Figure C1.3). The majority of FSWs (55.0%) were found to be illiterate, with illiteracy being more common among FSWs in brothels (66.5%) and kothikhanas (65.7%) (Figure C1.4). Less than one percent of FSWs are graduates. Illiteracy levels vary substantially by city, with very high illiteracy among FSWs in Hyderabad (87.9%), Peshawar (78.0%) and Sukkur (68.5%). Illiteracy was lowest among FSWs in Multan (21.8%).

Table C1.3 Selected socio-demographic characteristics of FSWs in 8 cities of Pakistan, 2005

Characteristic	Type of Female Sex Worker				All FSWs (n=3,134)
	Public Places (n=1,250)	Home Based (n=939)	Kothikhana (n=741)	Brothel (n=204)	
Current Age					
15-19 years	13.1%	10.5%	6.3%	15.2%	10.9%
20-24 years	24.3%	19.8%	24.4%	27.9%	23.2%
25-29 years	25.5%	27.4%	27.3%	18.6%	26.0%
30-34 years	16.2%	17.1%	18.6%	13.7%	16.9%
35+ years	20.6%	25.0%	23.3%	24.5%	22.8%
Mean Age	***27.1***	***28.1***	***27.9***	***26.9***	***27.6***
Marital Status					
Unmarried	37.4%	24.8%	22.5%	24.0%	29.2%
Married	52.6%	65.3%	69.9%	74.5%	61.9%
Separated/divorced	8.2%	7.3%	5.9%	1.5%	7.0%
Widowed	1.5%	2.4%	1.5%	0.0%	1.7%
Number of Children					
None	21.7%	11.2%	15.6%	15.9%	14.7%
1-2	41.6%	31.1%	29.2%	35.5%	32.9%
3-4	23.0%	32.3%	28.2%	28.2%	29.1%
5+	13.7%	25.4%	27.0%	20.4%	23.2%
Education / Literacy					
Illiterate	50.0%	50.7%	65.7%	66.5%	55.0%
Primary-Intermediate	48.9%	48.6%	33.5%	33.5%	44.2%
Graduate	1.1%	0.7%	0.8%	0.0%	0.8%
Living Arrangement					
Local Resident	79.8%	86.0%	72.9%	56.9%	78.5%
Lives at home	95.6%	98.3%	96.6%	88.7%	96.2%
Lives Alone	7.2%	5.7%	4.9%	9.3%	6.4%
With Family	83.9%	85.4%	88.9%	85.1%	85.6%
% With Other Income	27.8%	34.4%	41.8%	16.2%	32.3%

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Figure C1.2 Mean age of sex work initiation, duration in sex work and current age by sex work typology among FSWs in 8 cities of Pakistan, 2005

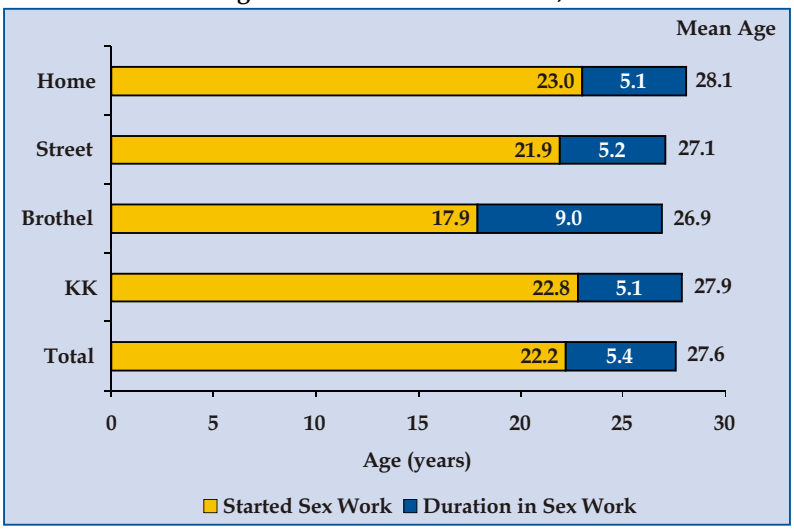


Figure C1.3 Mean age of sex work initiation, duration in sex work and current age of FSWs in 8 cities of Pakistan, 2005

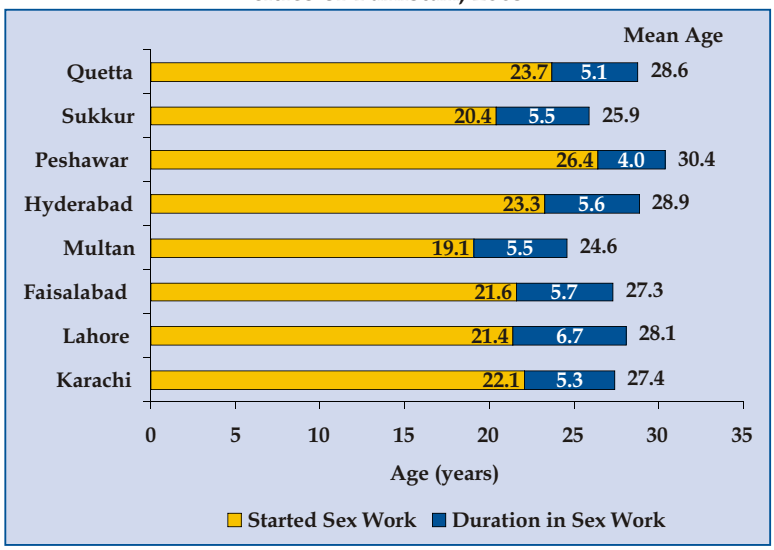
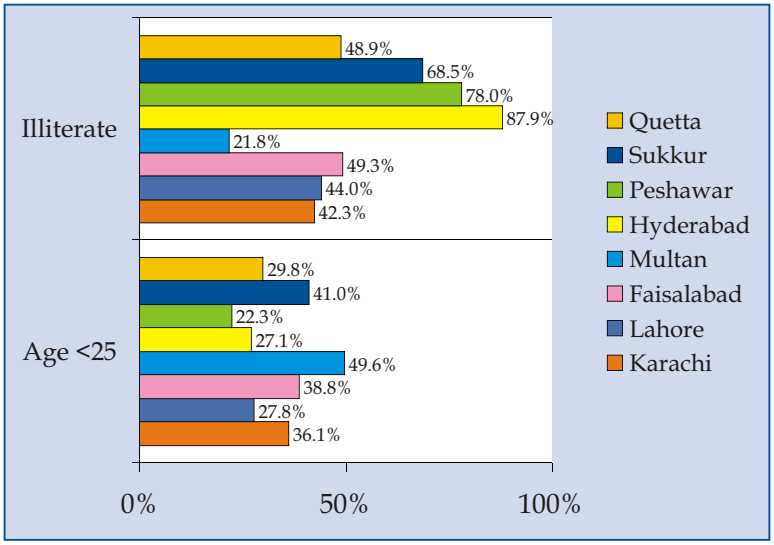


Figure C1.4 Age distribution and illiteracy among FSWs in 8 cities of Pakistan, 2005



The majority of FSWs (61.9%) are married, and a small proportion is separated/divorced (7.0%) or widowed (1.7%). FSWs who work in public places are the most likely to be unmarried (37.4%). The large majority of FSWs have children, with less than 15% being childless, and more than 23% having at least 5 children. There is substantial variation in the family situation of FSWs between the eight cities (see Figure C1.5). More than 90% of FSWs in Peshawar and Hyderabad are married, whereas less than 50% are married in Quetta, Multan, Faisalabad and Karachi. The proportion of FSWs with more than 2 children is highest in Peshawar (85.9%) and Hyderabad (77.2%).

Most FSWs (78.5%) are residents of the city in which they work, with brothel based FSWs being least likely to be a local resident (56.9%). The proportion of FSWs who are local residents varies substantially by city, with more than 90% being local residents in Quetta, Lahore and Multan (see Figure C1.6). In contrast, only 51.3% of Karachi-based FSWs are local residents. The vast majority of FSWs of all types and in all cities live at home, and with other family members (Table C1.3 and Figure C1.6).

Only 32.3% of all FSWs have a source of income other than sex work, with brothel based FSWs being the least likely (16.2%) to have other sources of income (Table C1.3).

Figure C1.5 Family status of FSWs in 8 cities of Pakistan, 2005

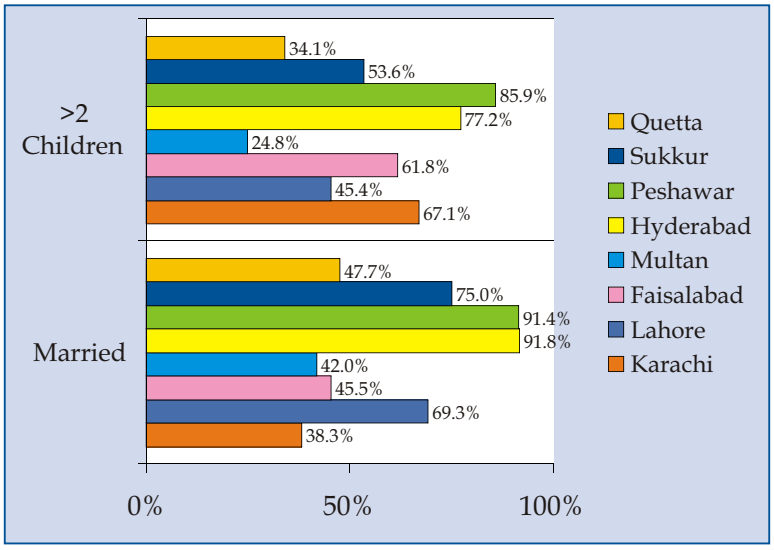
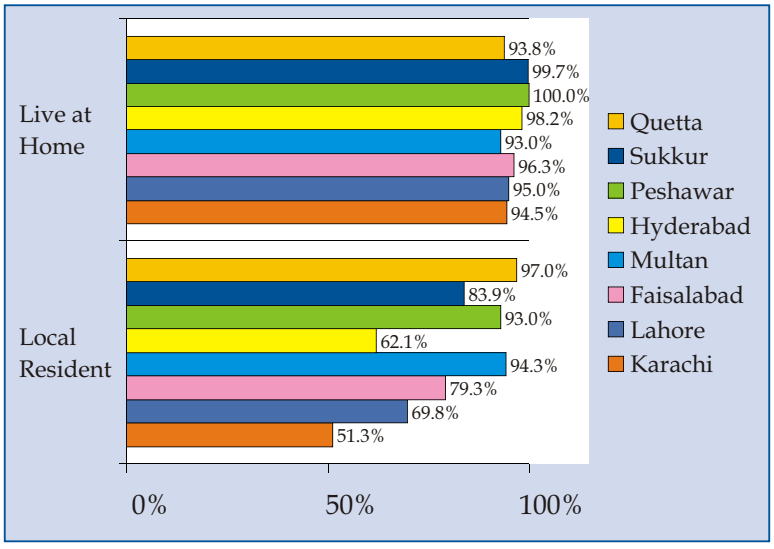


Figure C1.6 Living arrangement of FSWs in 8 cities of Pakistan, 2005



C.1.3 Female sex worker practices and behaviours

This section summarizes the key sex work related practices and behaviours of FSWs. With the exception of FSWs who work in public places, most FSWs rely on a "madam" as their main source of clients (Table C1.4). Overall, 39.9% of FSWs rely on madams as their main source of clients, but only 15.3% of FSWs who work in public places rely primarily on a madam for clients. Personal telephone contact and referrals from other clients are important client sources for all types of FSWs, and together they are the main sources of clients for almost 35% of FSWs.

Table C1.4 Selected sex work related practices and behaviours among FSWs in 8 cities of Pakistan, 2005

Practice / Behaviour	Type of Female Sex Worker				All FSWs (n=3,134)
	Public Places (n=1,250)	Home Based (n=939)	Kothikhana (n=741)	Brothel (204)	
Main Source of Clients					
Madam	15.3%	55.6%	56.4%	59.3%	39.9%
Pimp	3.1%	1.1%	0.5%	0.5%	1.7%
Personal Telephone	21.6%	11.0%	11.8%	18.1%	15.9%
"Roaming around"	44.7%	5.4%	18.0%	6.9%	24.1%
Client Referrals	15.4%	27.0%	13.4%	15.2%	18.3%
Average clients / day	3.5	8.0	2.2	3.0	4.5
Average clients last month	32.6	27.5	32.8	38.0	31.6
At least one other non-client partner last month	48.6%	62.4%	55.6%	39.8%	53.8%
>1 other partner last month	17.0%	17.4%	13.7%	11.9%	16.0%
Average sex work income / month (PKR)	12,421	14,540	4,922	22,809	11,949
Earn >10,000 / month	55.0%	51.6%	11.9%	56.4%	43.9%
Have any other Income	27.8%	34.4%	41.8%	16.2%	32.3%
Alcohol or drugs with sex in past 6 months	29.5%	27.7%	17.7%	47.8%	27.4%
Injected drugs in the past 6 months	3.9%	2.6%	3.9%	1.0%	3.3%
Sex with injecting drug user in past 6 months	16.1%	14.4%	6.8%	17.2%	13.5%

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Overall, FSWs report that on days that they work they have an average of 4.5 clients a day (Table C1.4). Home based FSWs have highest client volume (8.0 per day) on the days that they work, with Kothikhana FSWs having the lowest daily client volume (2.2 per day). Overall, the average number of clients per month for FSWs was 31.6, ranging from 27.5 clients per month for home based FSWs to 38.0 clients in a month for those in brothels. Comparing these data to the daily client volumes, it is evident that FSWs working in brothels and Kothikhanas work on more days in a month, but take a lower average number of clients in a day than FSWs who work at home or in public places. Monthly client volume varies substantially between different cities, ranging from 7.6 clients in Hyderabad to an average of 62.0 clients among FSWs in Sukkur (Figure C1.7). Client volume also varies by age, with younger FSWs having the highest client volume (Figure C1.8).

Figure C1.7 Average number of clients in the last one month among FSWs in 8 cities of Pakistan, 2005

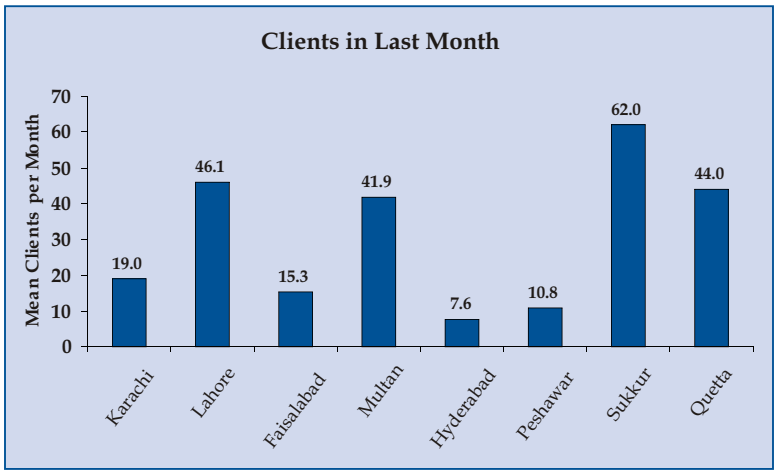
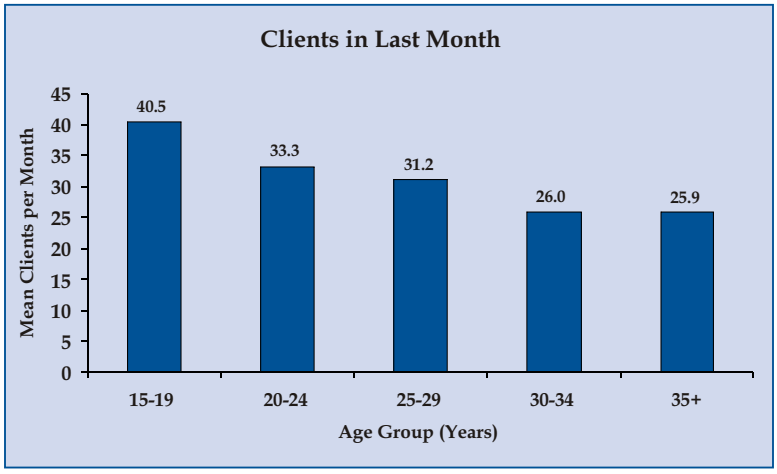


Figure C1.8 Average number of clients in the last one month by age group among FSWs in 8 cities of Pakistan, 2005



The vast majority of FSW clients engage in vaginal sex, but FSWs also report having a few clients with whom they engage in anal or oral sex each month (Figure C1.9). FSWs in Lahore, Faisalabad and Quetta reported anal sex with an average of 3-4 clients in the last month. Anal sex was less common in other cities. Younger FSWs tend to have anal or oral sex with more clients than older sex workers (see Figure C1.10).

Figure C1.9 Average number of clients with whom FSWs had anal or oral sex in 8 cities of Pakistan, 2005

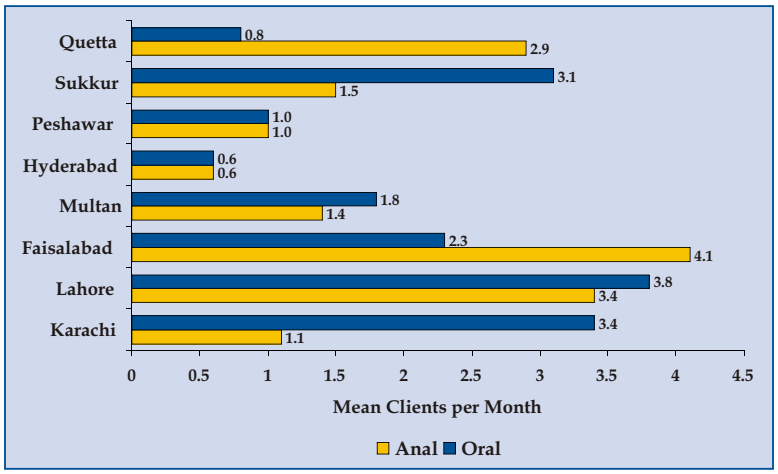
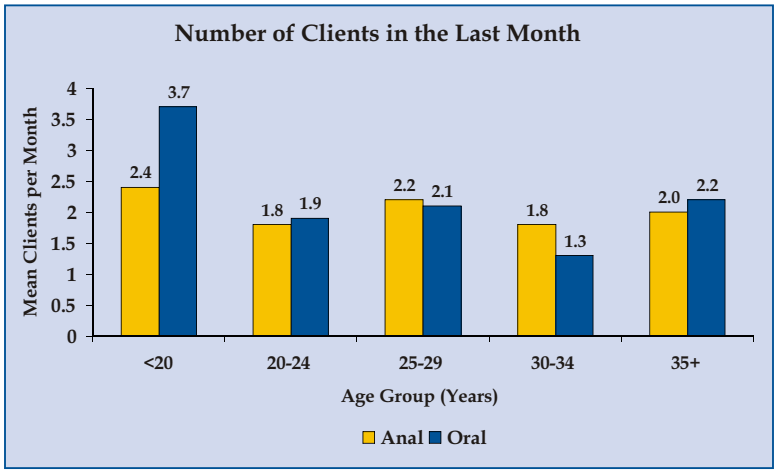
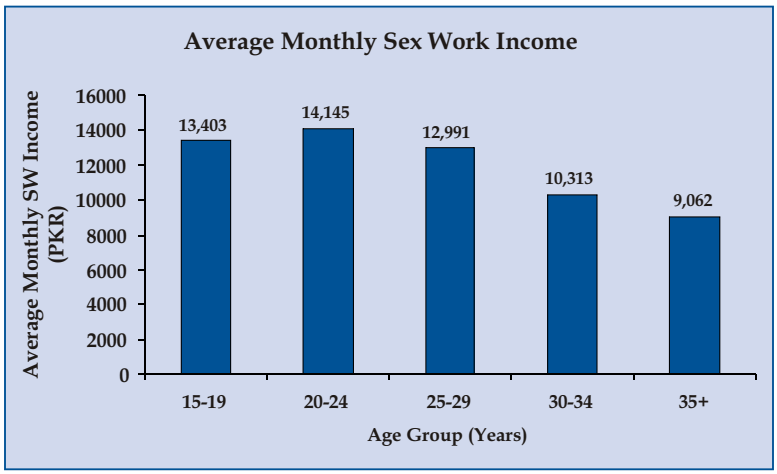


Figure C1.10 Average number of clients with whom FSWs had anal or oral sex in 8 cities of Pakistan, by age group, 2005



On average, FSWs earn approximately 12,000 rupees per month. Brothel based sex workers earn substantially more (approx. 22,800 rupees per month) than other types, and FSWs working in Kothikhanas earn much less than others (approx. 4,900 per month) (Table C1.4). Younger sex workers earn a higher average monthly income than older sex workers (see Figure C1.11).

Figure C1.11 Average monthly sex work income by FSWs in 8 cities of Pakistan, by age group, 2005



Condom use by FSWs with their clients is generally very low. Only 18% of FSWs reported that they always used a condom with their clients in the last month, and 32% reported that they never use condoms with clients (Figure C1.12). Brothel-based FSWs reported substantially more condom use than the other types of sex workers, with 50% of them reporting consistent condom use and only 9% reporting that they never used condoms. Overall, 34% of FSWs reported using a condom with their most recent client. Brothel based FSWs had the highest reported use at 60% of their most recent clients (Figure C1.13).

Figure C1.12 Condom use by FSWs with clients in the past month in 8 cities of Pakistan, 2005

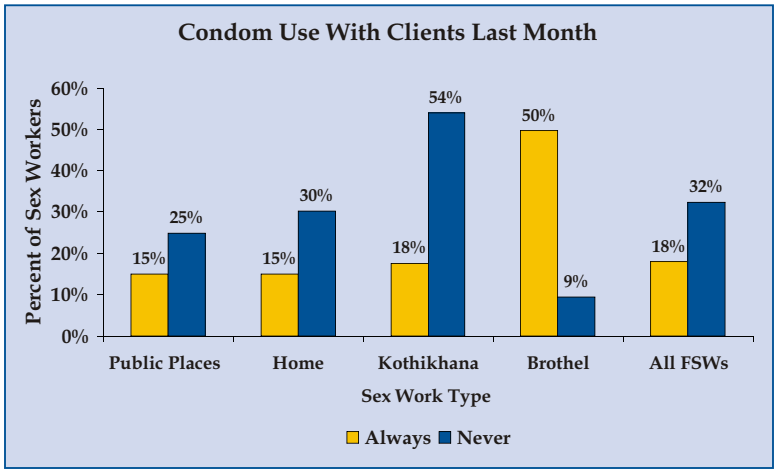
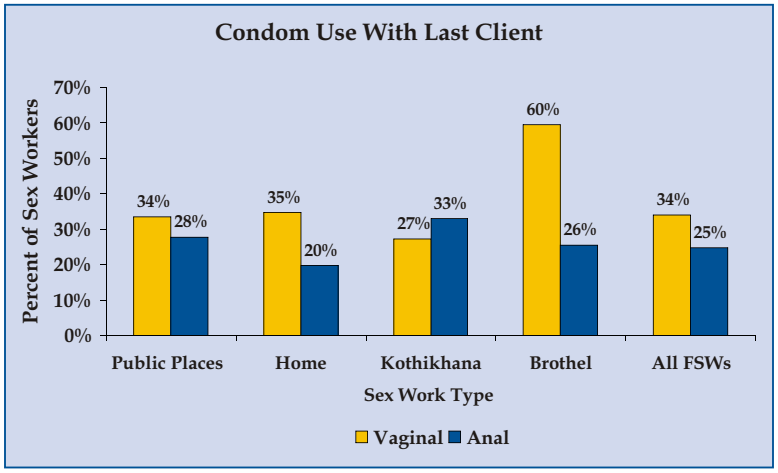
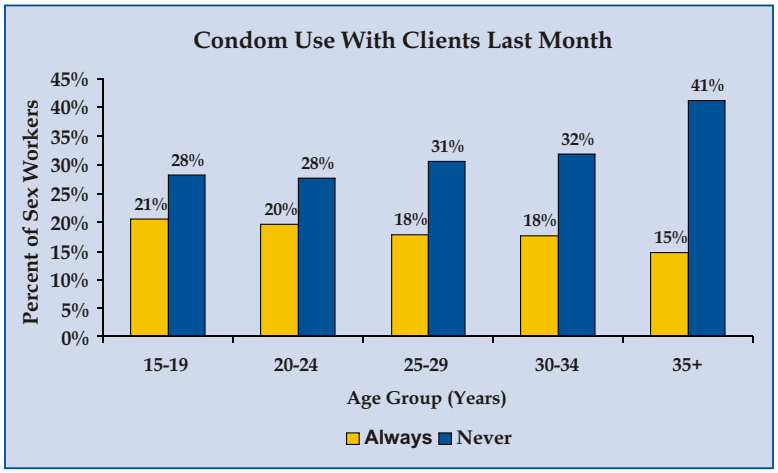


Figure C1.13 Condom use by FSWs with their most recent clients in 8 cities of Pakistan, 2005



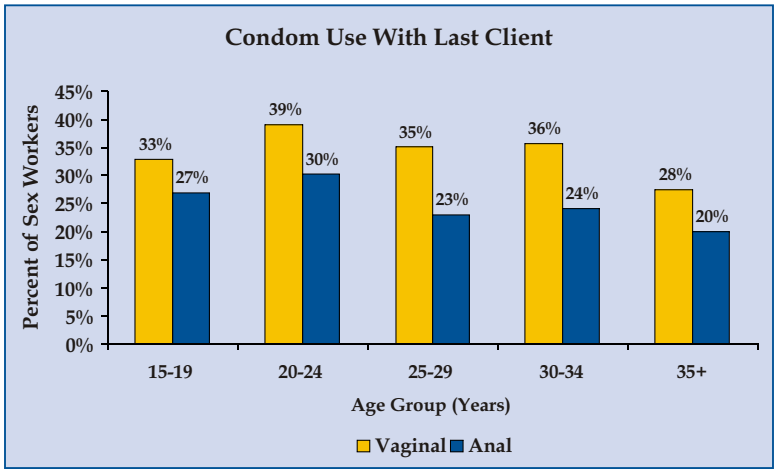
Reported condom use tended to be higher among younger sex workers, with 21% of FSWs aged 15-29 reporting consistent condom use in the past month, compared to 15% of FSWs aged 35+ (Figure C1.14).

Figure C1.14 Condom use patterns by FSWs with clients in the past month in 8 cities of Pakistan, 2005



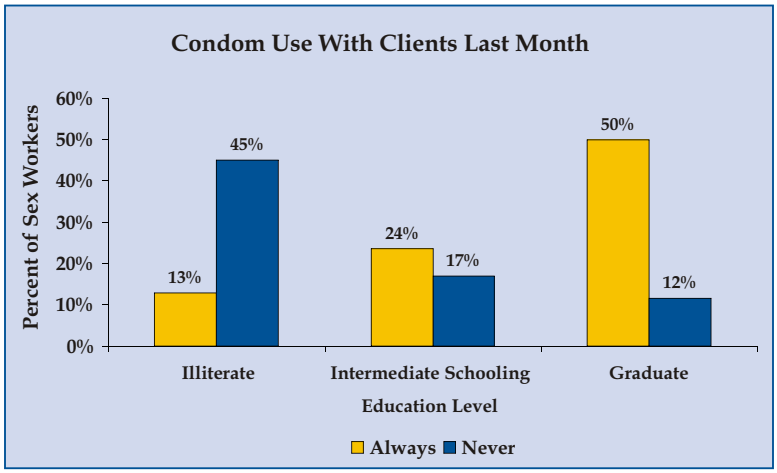
Reported condom use with the last client was lower for anal sex than for vaginal sex across all age groups (Figure C1.15).

Figure C1.15 Condom use by FSWs with their last client in 8 cities of Pakistan, 2005



Condom use is considerably lower among illiterate FSWs than among those with more general education (Figure C1.16). Only 13% of illiterate FSWs reported consistent condom use in the last month.

Figure C1.16 Condom use by FSWs with clients in the past month by education level in 8 cities of Pakistan, 2005



Condom use varies substantially by city (Figure C1.17). Reported consistent condom use is highest in Lahore (42%) and Karachi (30%), and less than 15% in all of the other cities. A high proportion of FSWs in Sukkur and Hyderabad report never using a condom with a client in the last month (60% and 71%, respectively). Similarly, reported condom use with the last client is highest in Lahore (68% for vaginal sex) and Karachi (50% for vaginal sex), and lowest in Sukkur and Hyderabad (17% for vaginal sex in each city) (Figure C1.18). In most cities, reported condom use with the last client was higher for vaginal sex than for anal sex.

Figure C1.17 Condom use by FSWs with clients in the past month in 8 cities of Pakistan, 2005

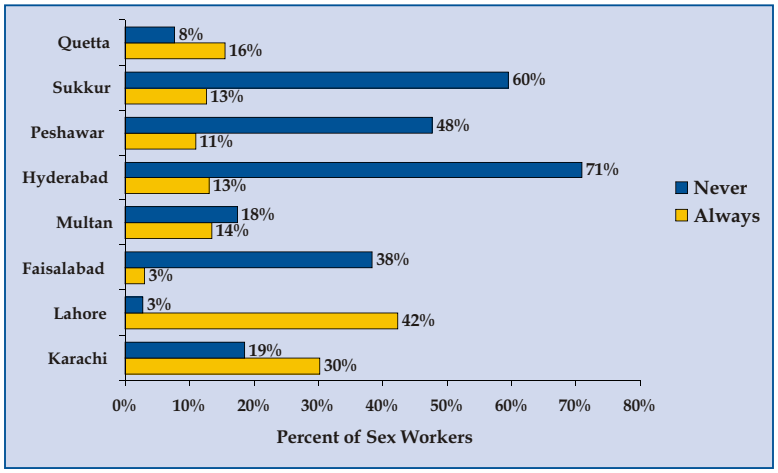
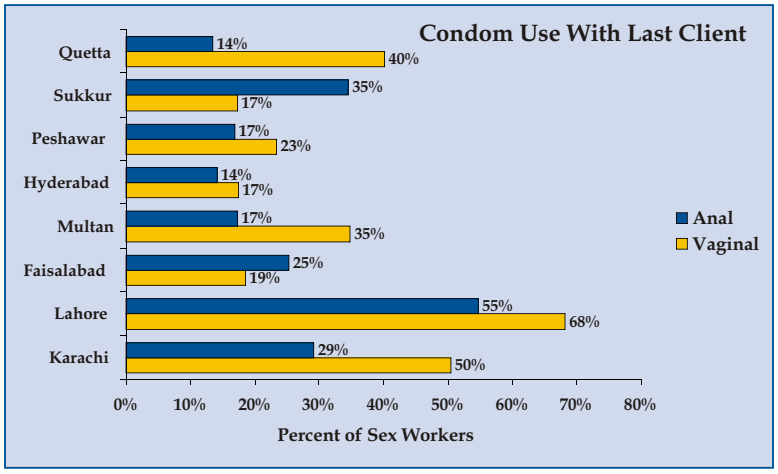


Figure C1.18 Condom use with their last client for vaginal and anal sex by FSWs 8 cities of Pakistan, 2005



Only a small percentage of FSWs were carrying a condom at the time of the survey interview (Figures C1.19, C1.20 and C1.21). Consistent with self-reported condom use, brothel based FSWs were much more likely to be carrying a condom (49.5%) than other types of FSWs (Figure C1.19). Also consistent with self-reported condom use, young FSWs were more likely than older ones to be carrying a condom (Figure C1.20), and FSWs in Lahore and Karachi were much more likely to be carrying a condom than those in other cities (Figure C1.219).

Figure C1.19 Proportion of FSWs who were carrying a condom at the time of the survey interview in 8 cities of Pakistan, 2005

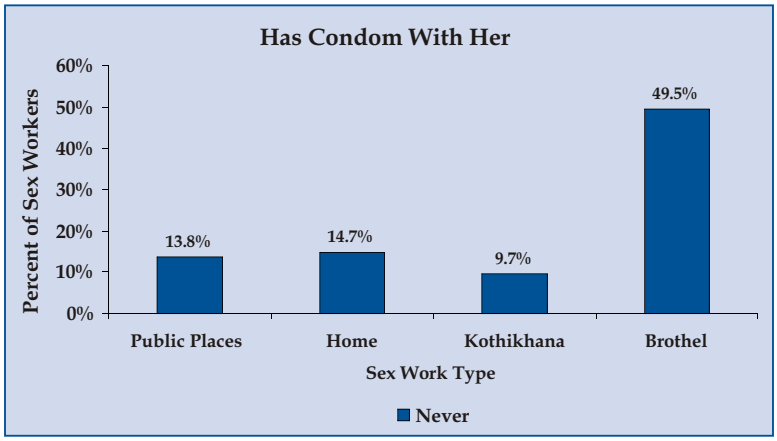


Figure C1.20 Proportion of FSWs who were carrying a condom at the time of the survey interview in 8 cities of Pakistan, by age group, 2005

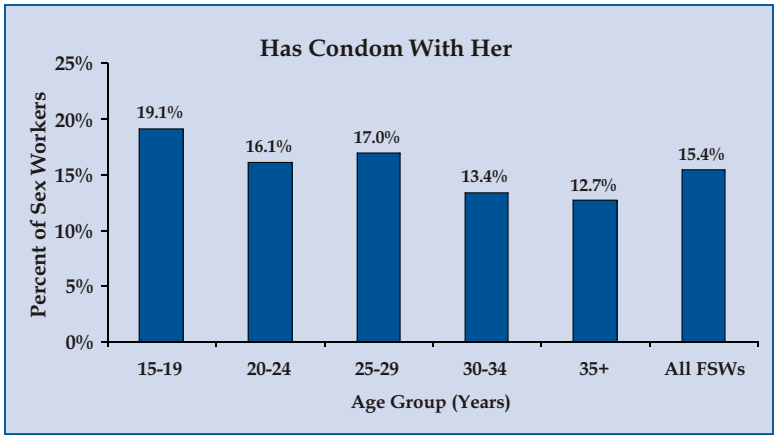
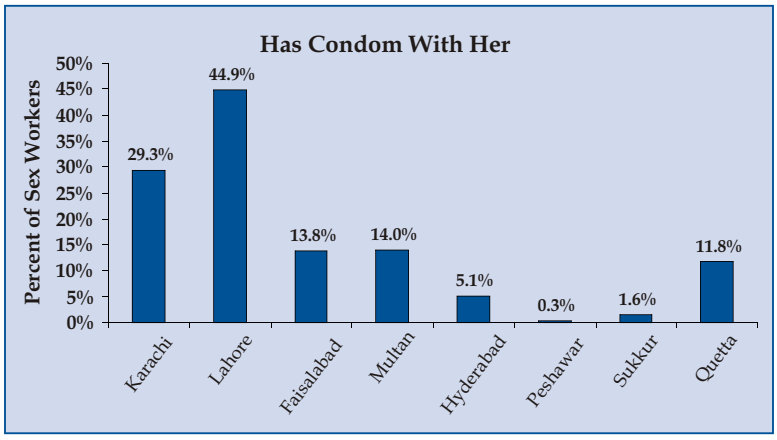


Figure C1.21 Proportion of FSWs who were carrying a condom at the time of the survey interview in 8 cities of Pakistan, 2005



Overall, 27.4% of FSWs reported taking alcohol and or drugs in the context of sex in the past six months (Table C1.4). The prevalence of this behaviour is similar across age groups, though somewhat less common in older FSWs (Figure C1.22). The use of alcohol and/or drugs in sexual encounters is much more commonly reported in some cities (notably Multan, Lahore and Karachi) than in others (Figure C1.23).

Figure C1.22 Use of alcohol and/or drugs by FSWs in the context of sex in the past 6 months in 8 cities of Pakistan, by age group, 2005

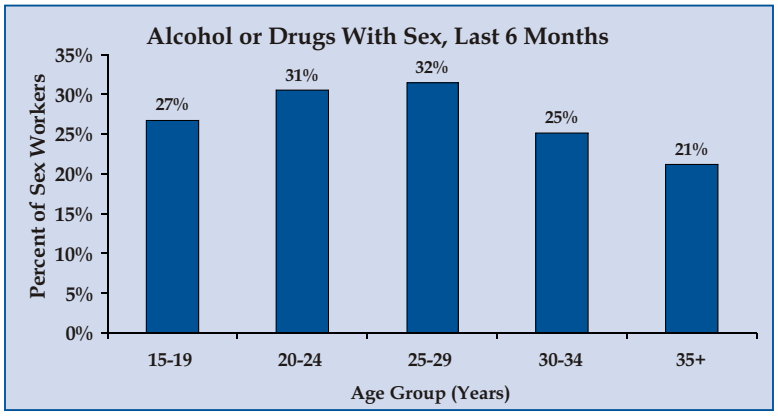
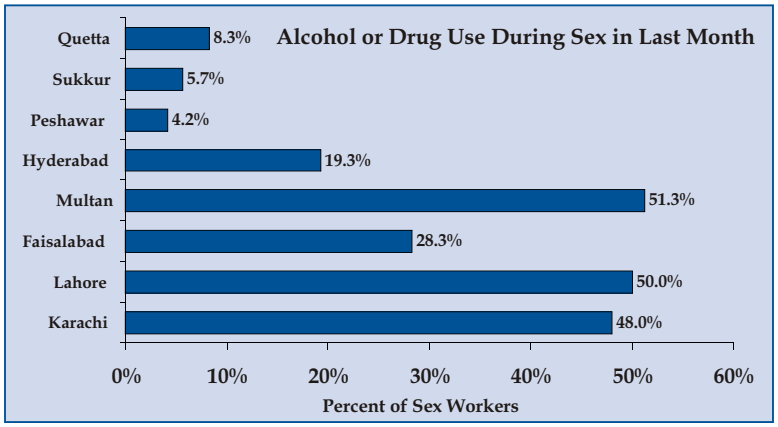


Figure C1.23 Use of alcohol and/or drugs by FSWs in the context of sex in the past 6 months in 8 cities of Pakistan, 2005



C.1.4 HIV related knowledge, program exposure and violence

Various aspects of HIV related knowledge and service utilization are summarized in Table C1.5. Overall, approximately 64% of FSWs had ever heard of HIV and/or AIDS, with brothel based sex workers reporting the highest level of awareness (89.7%) and kothikhana based sex workers being the least aware (61.6%). Of those who had heard about HIV and/or AIDS, only 45% believe that a healthy looking person can be living with HIV. Most FSWs who had heard about HIV and/or AIDS knew that HIV can be transmitted by sexual intercourse, but less than half (42.4%) knew that HIV can be transmitted through

injuries by sharp instruments or needles/syringes. Only 60.4% of those who had heard of HIV and/or AIDS were aware that condom use is a method to prevent HIV transmission, and 57.3% believe that sexual abstinence is an HIV prevention method. Only 11.6% knew where they could receive HIV testing, and 6.2% reported ever being tested for HIV. Less than one-third of FSWs (28.0%) who had heard of HIV and/or AIDS believe that they are at risk for acquiring HIV infection. Among FSWs who had heard of HIV and/or AIDS, brothel based and kothikhana based FSWs had the highest levels of knowledge with respect to HIV transmission and prevention techniques.

Table C1.5 HIV related knowledge, program participation, and reported violence among FSWs in 8 cities of Pakistan, 2005

Knowledge Area	Type of Female Sex Worker				All FSWs (n=3,134)
	Public Places (n=1,250)	Home Based (n=939)	Kothikhana (n=741)	Brothel (n=204)	
Ever heard of HIV and/or AIDS	**62.7%**	**62.5%**	**61.6%**	**89.7%**	**64.1%**
Healthy looking person can have HIV / AIDS	25.1%	26.7%	54.4%	71.6%	45.0%
HIV transmitted by sexual intercourse	82.2%	66.0%	98.0%	96.4%	81.7%
HIV transmitted by sharp instrument / needle	39.0%	26.9%	53.9%	73.0%	42.4%
Condom is a method to prevent HIV transmission	65.3%	36.6%	73.9%	92.5%	60.4%
Sexual abstinence is a method to prevent HIV transmission	66.5%	41.9%	68.6%	44.3%	57.3%
Ever tested for HIV	3.3%	2.2%	5.9%	32.0%	6.2%
Know where to receive HIV test	7.3%	11.4%	54.0%	21.2%	11.6%
Believe self to be at risk for HIV	20.3%	18.5%	47.1%	43.4%	28.0%
Aware of other sexually transmitted infections	**52.4%**	**52.7%**	**53.0%**	**90.2%**	**55.1%**
Self-reported STI in past 6 mos.	19.3%	22.4%	8.2%	21.5%	16.7%
Received treatment for STI	83.6%	73.7%	70.0%	81.0%	77.9%
Ever heard of HIV prevention programs	**14.8%**	**15.1%**	**8.9%**	**54.7%**	**16.1%**
Participated in HIV program	**0.4%**	**0.6%**	**0.8%**	**23.6%**	**2.1%**
Violence or other force for sex, past 6 months	**22.9%**	**21.3%**	**17.4%**	**14.9%**	**20.6%**
Arrested in the past 6 months	**11.6%**	**5.6%**	**5.0%**	**13.0%**	**8.3%**

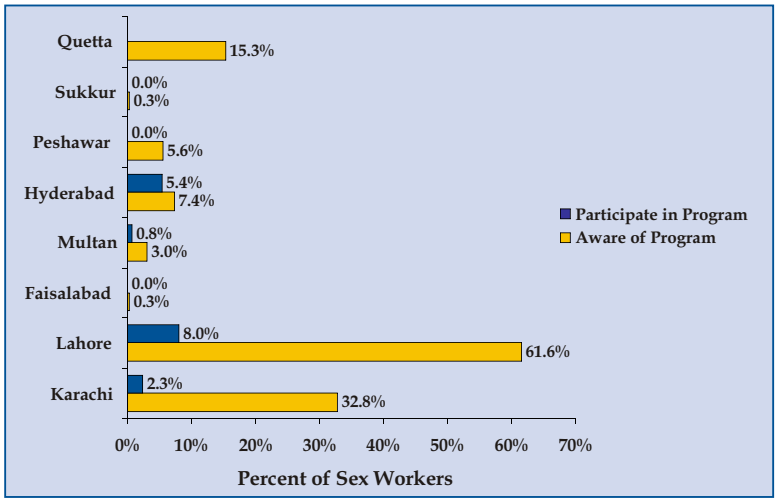
Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Only 16.1% of FSWs reported that they had ever heard of HIV prevention programs, and overall only 2.1% of FSWs reported that they had participated in one of these programs (Table C1.5). Knowledge of and participation in programs was much higher among brothel based FSWs than any other types. Almost 55% of brothel based FSWs had heard of programs and 23.6% reported having participated in a program. Knowledge of programs was much higher in Lahore (61.6%) and Karachi (32.8%) than in any of the other cities (Figure C1.24).

Violence was reported by a relatively high proportion of FSWs. Overall, 20.6% of FSWs reported that they had been subjected to violence or other means to force them into sex within the past six months (Table C1.5). Violence was reported more commonly by FSWs working at home or in public places than by those working in kothikhanas or brothels. FSWs working in Karachi were most likely to report violence (28.3%), whereas FSWs in Quetta were least likely (11.5%) (Figure C1.25). Approximately 8% of FSWs reported having been arrested in the past six months, with brothel based and public place based FSWs reporting this most frequently (13.0% and 11.6%, respectively) (Table C1.5). FSWs in Lahore,

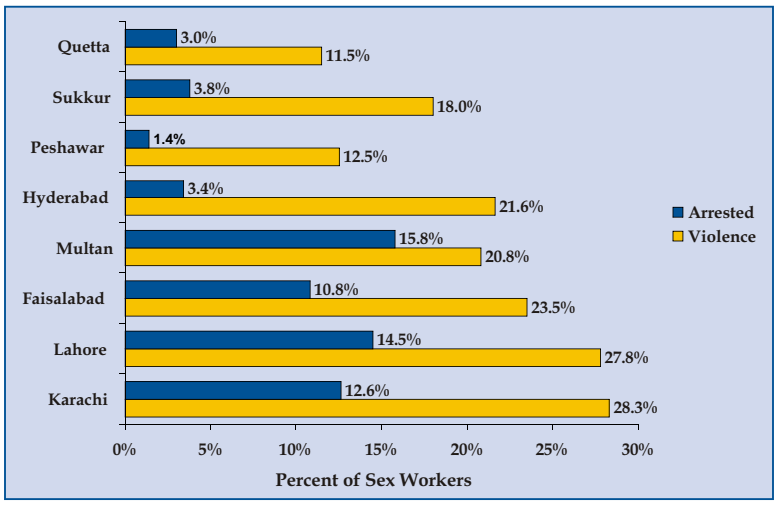
Karachi, Multan and Faisalabad were the most likely to report being arrested in the past six months (Figure C1.25).

Figure C1.24 Knowledge of and participation in HIV prevention programs by FSWs in 8 cities of Pakistan, 2005



Note: Quetta database was missing data on program participation.

Figure C1.25 Self-reported violence and arrest by FSWs in 8 cities of Pakistan, 2005



C.1.5 HIV prevalence

The prevalence of HIV among FSWs was very low. Only six FSWs were HIV-positive, for an overall prevalence of 0.2% (95% confidence interval, 0.07-0.4%). Three FSWs tested positive in Karachi (prevalence 0.8%, 95 percent CI 0.2-2.2%) and three in Quetta (prevalence 0.7%, 95 percent CI 0.1-2.1%).

Key Findings Female Sex Workers

- The relative size of the FSW population in eight cities of Pakistan ranges from 4.0 per 1,000 men (4.5 per 1,000 women) in Peshawar to 11.4 per 1,000 men (12.6 per 1,000 women) in Lahore.
- Almost 60% of FSWs in these cities are home-based or work in Kothikhanas, with most of the remaining (40%) working from public places.
- More than half of FSWs are illiterate, and illiterate sex workers are the least likely to use condoms.
- On average, FSWs entertain 4.5 clients in a working day and approximately 32 clients in a month. Younger sex workers have the highest number of clients.
- Client volume varies between cities, with FSWs living in Lahore, Multan, Sukkur and Quetta having the highest monthly client volume.
- Overall, condom use with clients is low; only 18% reported using always using condoms and 34% reported using a condom with their most recent client.
- Condom use was highest among brothel-based sex workers, with 50% reporting always using condoms and 60% reporting condom use with their last client. Condom use was uniformly low in all other categories of FSWs with less than 20% reporting consistent condom use.
- Reported condom use is considerably higher in Lahore and Karachi than in any of the other cities.
- Only 16% of FSWs have ever heard of HIV prevention programs in their city, and only 2.1% have ever participated in prevention programs.
- Knowledge of and participation in HIV prevention programs is highest in Lahore and Karachi, and FSWs in these cities report substantially more condom use than FSWs in other cities.

C.2 Male and Hijra Sex Workers

C.2.1 Population size and distribution

In the eight cities mapped, the total combined number of male sex workers (MSWs) and Hijra sex workers (HSWs) was estimated to be approximately 25,870, with a range of approximately 22,200 to 29,540. Table C2.1 shows the estimated number of MSWs and HSWs for each city mapped in Round 1. The largest population estimates for both MSWs and HSWs were from Karachi (14,250 MSWs and HSWs), followed by Faisalabad, Lahore and Multan. Overall, across all cities there were an estimated 2.3 MSWs and 2.4 HSWs per 1,000 adult men, with the highest relative populations being in Multan (6.3 per 1,000, men) and Karachi (6.2 per 1,000 men). Lahore had the fewest MSWs and HSWs per capita (1.0 and 0.9 per 1,000, respectively).

Table C2.1 Estimated population size of male (MSWs) and Hijra sex workers (HSWs) in 8 cities of Pakistan, 2005

City	Estimated number of Male Sex Worker and Hijra Sex Workers			Mean MSW/HSW per 1,000 adult men
	Minimum	Maximum	Mean	
Karachi				
Male SW	5,000	6,400	5,700	2.5
Hijra SW	7,600	9,500	8,550	3.7
Sub-Total	**12,600**	**15,900**	**14,250**	**6.2**
Lahore				
Male SW	1,000	1,500	1,250	1
Hijra SW	1,700	2,200	1,950	0.9
Sub-Total	**2,700**	**3,700**	**3,200**	**1.9**
Faisalabad				
Male SW	850	1,300	1,075	2.2
Hijra SW	1,300	1,700	1,500	3.1
Sub-Total	**2,150**	**3,000**	**2,575**	**5.3**
Multan				
Male SW	850	1,400	1,125	3.9
Hijra SW	650	1,100	875	2.4
Sub-Total	**1,500**	**2,500**	**2,000**	**6.3**
Hyderabad				
Male SW	600	800	700	2.5
Hijra SW	490	650	570	2.1
Sub-Total	**1,090**	**1,450**	**1,270**	**4.6**
Peshawar				
Male SW	1,000	1,300	1,150	4.8
Hijra SW	80	110	95	0.4
Sub-Total	**1,080**	**1,410**	**1,245**	**5.2**
Sukkur				
Male SW	330	470	400	1.8
Hijra SW	270	400	335	1.5
Sub-Total	**500**	**870**	**735**	**3.3**
Quetta				
Male SW	310	480	395	2.8
Hijra SW	170	230	200	1.4
Sub-Total	**480**	**710**	**595**	**4.2**
All Cities				
Male SW	**9,940**	**13,650**	**11,795**	**2.3**
Hijra SW	**12,260**	**15,890**	**14,075**	**2.5**
Total	***22,200***	***29,540***	***25,870***	***4.8***

C.2.2 Socio-demographic characteristics of MSWs and HSWs

The main socio-demographic characteristics of MSWs and HSWs are summarized in Table C2.2. Overall, the average current age of MSWs was 22.3. HSWs tended to be older, with an average age of 26.7. The vast majority of MSWs and HSWs (84% of each group) were unmarried, and few have any children. On average, MSWs and HSWs started in sex work at approximately the same age; 16.9 years for MSWs and 16.4 years for HSWs (Figure C2.1). HSWs had been in sex work for longer (average of 10.3 years) than MSWs (5.4 years). There was little difference in the average age of MSWs between the eight cities, but MSWs in Quetta and Sukkur had worked for the shortest duration (average 3.9 and 3.0 years, respectively) (see Figure C2.2). On average, HSWs initiated sex work at the youngest age in Karachi (15.0 years) and Hyderabad (15.3 years), and those in Hyderabad and Karachi had worked the longest (13.4 and 11.4 years, respectively (see Figure C2.3). A substantial proportion of MSWs are currently aged <20 years, particularly in Peshawar (40.5%), Karachi (39.5%) and Faisalabad (37.5%) (Figure C2.4). In contrast, fewer than 20% of the HSWs interviewed were aged <20 years in all of the cities (Figure C2.5).

Table C2.2 Selected socio-demographic characteristics of MSWs and HSWs in 8 cities of Pakistan, 2005

	Male Sex Workers (n=1,781)	Hijra Sex Workers (n=1,569)	Total for MSWs and HSWs (n=3,350)
Current Age			
15-19 years	32.7%	12.4%	23.2%
20-24 years	40.9%	28.6%	35.1%
25-29 years	17.5%	27.6%	22.1%
30-34 years	4.5%	17.1%	10.4%
35+ years	4.4%	14.3%	9.0%
Mean Age	***22.3***	***26.7***	***24.3***
Marital Status			
Unmarried	84.0%	84.0%	84.0%
Married	14.7%	15.3%	14.9%
Separated/divorced	1.0%	0.8%	0.9%
Widowed	0.3%	0.1%	0.2%
Number of Children			
None	88.0%	88.1%	88.1%
1-2	6.2%	6.2%	6.2%
3-4	4.2%	3.7%	3.9%
5+	1.6%	1.9%	1.8%
Education / Literacy			
Uneducated	34.6%	50.7%	42.2%
Primary-Intermediate	63.2%	48.8%	56.5%
Graduate	2.2%	0.4%	1.4%
Living Arrangement			
Local Resident	83.0%	75.0%	79.2%
Lives at home	87.9%	32.1%	61.7%
Lives Alone	5.7%	5.6%	5.7%
With Family	68.3%	21.2%	46.2%
With Friends	13.1%	61.6%	33.1%
% With Other Income	52.1%	55.5%	53.7%

The majority of MSWs (63.2%) have received at least primary education, but only 2.2% are graduates (Table C2.2). Just over half of the HSWs had received no formal school education. Among MSWs, the highest proportion uneducated was in Lahore (52.5% uneducated) and Peshawar (47% uneducated) (Figure C2.4). For HSWs, the highest proportions that were uneducated were in Hyderabad (65.3%), Peshawar (61.6%) and Lahore (60.0%) (Figure C2.5).

Figure C2.1 Mean age of sex work initiation, duration in sex work and current age among MSWs and HSWs in 8 cities of Pakistan, 2005

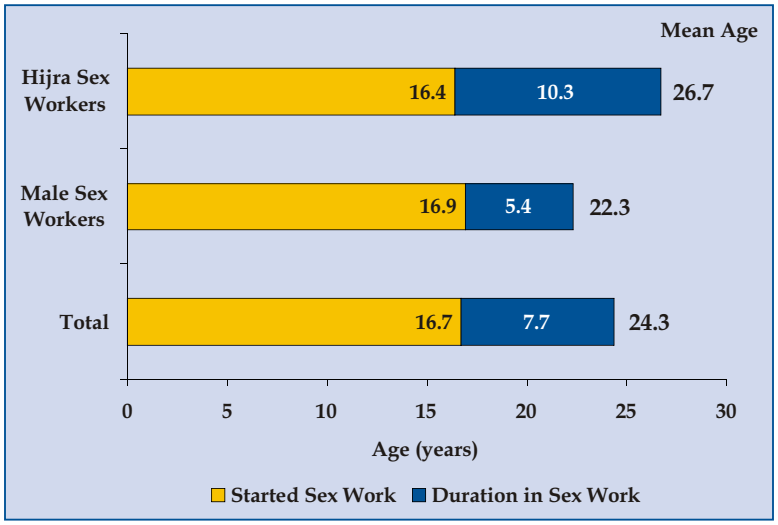


Figure C2.2 Mean age of sex work initiation, duration in sex work and current age of MSWs in 8 cities of Pakistan, 2005.

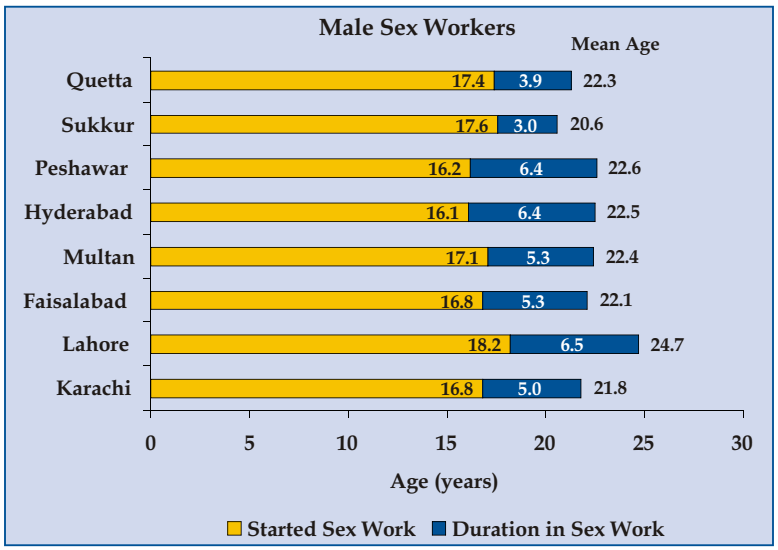


Figure C2.3 Mean age of sex work initiation, duration in sex work and current age of HSWs in 8 Cities of Pakistan, 2005

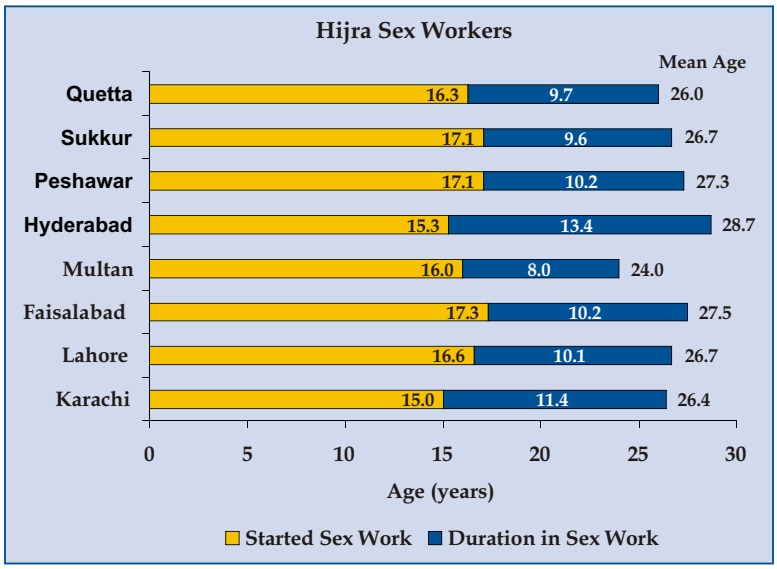


Figure C2.4 Age distribution and education among MSWs in 8 cities of Pakistan, 2005

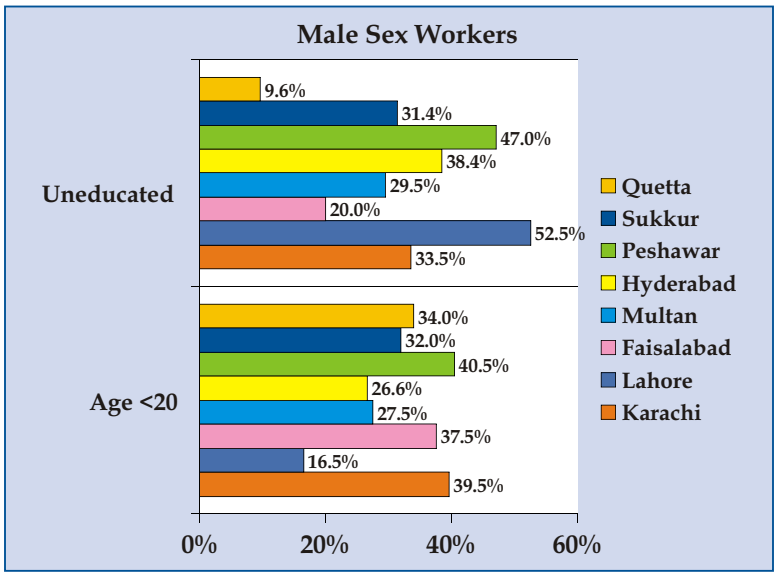
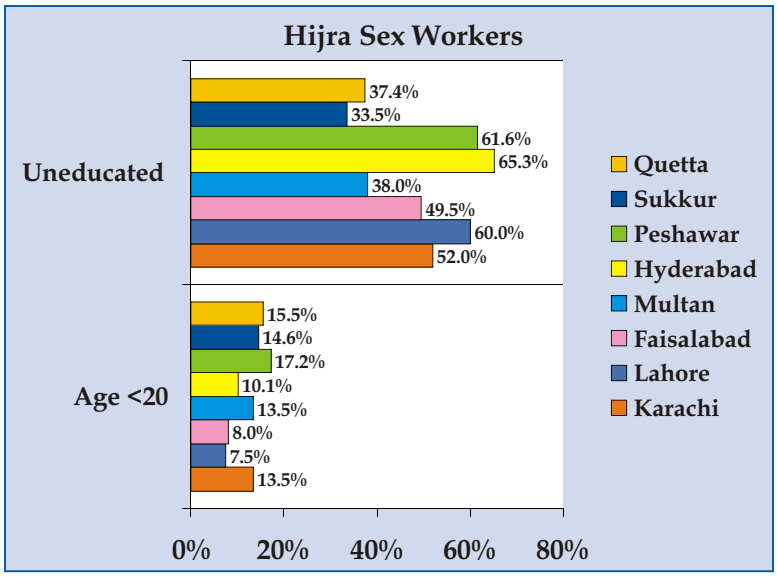
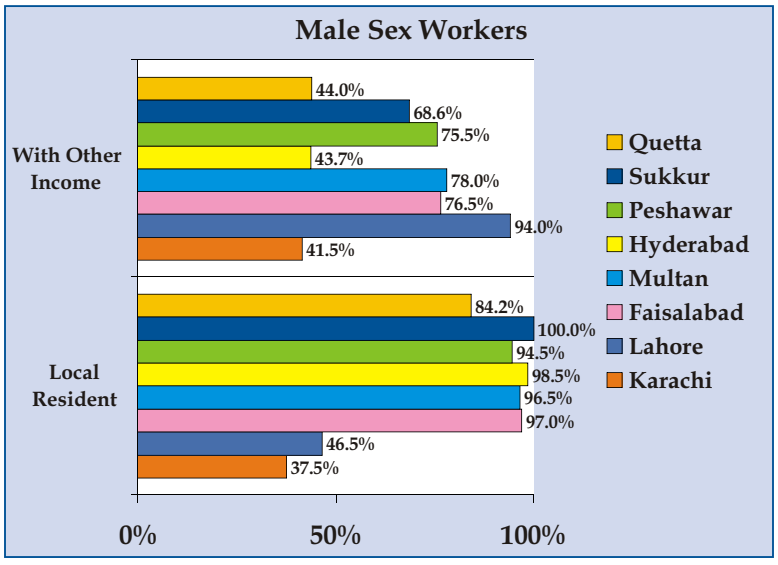


Figure C2.5 Age distribution and education among HSWs in 8 cities of Pakistan, 2005



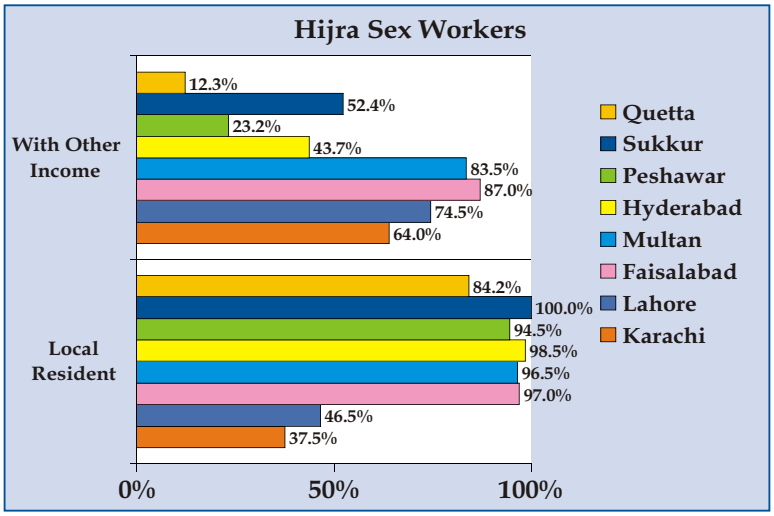
Overall, the large majority of MSWs (83.0%) and HSWs (75.0%) are local residents (Table C2.2). However, in Lahore and Karachi, less than half of the MSWs and HSWs are local residents (see Figures C2.6 and C2.7).

Figure C2.6 Residence and other income sources of MSWs in 8 Cities of Pakistan, 2005



Just over half of MSWs (52.1%) and HSWs (55.5%) have some source of income other than sex work (Table C2.2), but there is considerable variation between cities. The proportion of MSWs with other income ranges from 41.5% in Karachi to 94% in Lahore (Figure C2.6). The proportion of HSWs with non-sex work income ranges from 12.3% in Quetta to 87% in Faisalabad (Figure C2.7).

Figure C2.7 Residence and other income sources of HSWs in 8 cities of Pakistan, 2005



C.2.3 Male and Hijra sex worker practices and behaviours

This section summarizes the key sex work related practices and behaviours of MSWs and HSWs. Most MSWs (69.7%) rely on a "pimp" as a main source of clients, whereas most HSWs find clients through other sources such as meeting in public places and through personal contacts (Table C2.3). Most MSWs and HSWs reported that they didn't have any non-client sexual partners in the past month. Only 37.7% of MSWs and 31.8% of HSWs reported at least one non-client partner in the last month, and 31.3% of MSWs and 23.0% of HSWs reported more than one non-client partner. About 20% of MSWs and HSWs reporting that they had paid for sex in the past month. Approximately 5% of MSWs and HSWs reported injecting drugs in the past six months, and about twice that proportion reported having sex with an injecting drug user during that time period.

Table C2.3 Selected sex work related practices and behaviours among MSWs and HSWs in 8 cities of Pakistan, 2005

	Male Sex Workers (n=1,781)	Hijra Sex Workers (n=1,569)	Total for MSWs and HSWs (n=3,350)
Main Source of Clients			
Pimp/Guru	69.7%	34.7%	53.8%
Other Sources	30.3%	65.3%	46.2%
Average clients / day	2.3	2.5	2.4
Average clients last month	31.1	36.3	33.4
Average clients with anal sex last month	29.1	30.9	29.9
At least one other partner last month	37.7%	31.8%	34.8%
>1 other partner last month	31.3%	23.0%	27.5%
Paid anyone for anal sex in the last month	20.0%	21.1%	20.2%
Average sex work income / month (PKR)*	2,830	3,653	3,203
Alcohol or drugs with sex in past 6 months	43.5%	45.6%	44.5%
Injected drugs in the past 6 months	5.0%	5.3%	5.1%
Sex with injecting drug user in past 6 months	10.1%	8.4%	9.3%

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.
**Sex work income data is not available from Sindh cities.*

On an average day of sex work, MSWs have 2.3 clients and HSWs have 2.5 clients (Table C2.3). Neither MSWs nor HSWs work every day; the monthly average number of paying clients is 31.1 for MSWs and 36.3 for HSWs. Both groups reported that the large majority of their clients engaged in anal sex, and the average number of clients engaging in anal sex in the last month was 29.1 for MSWs and 30.9 for HSWs (Table C2.3). The client volume in the past month varied substantially between cities for both groups. For MSWs the average number of clients in the last month ranged from 7.8 in Lahore to 65.8 in Hyderabad (Figure C2.8). For HSWs, the average client volume in the past month ranged from 15.9 in Lahore to 79.6 in Sukkur (Figure C2.9).

Figure C2.8 Average number of clients in the last one month among MSWs in 8 cities of Pakistan, 2005

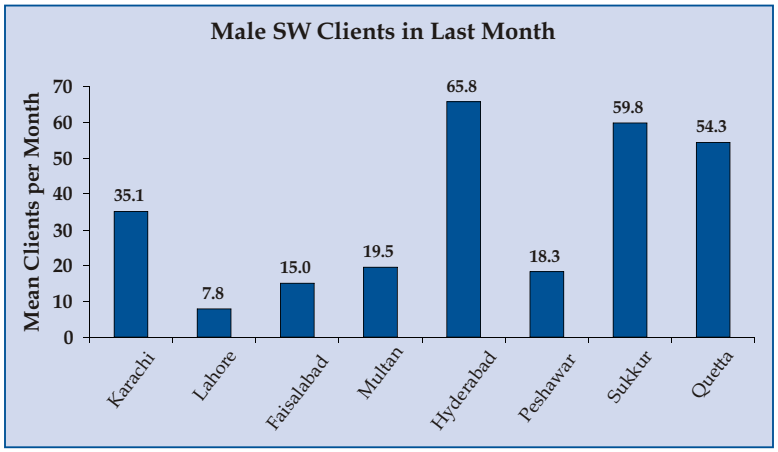
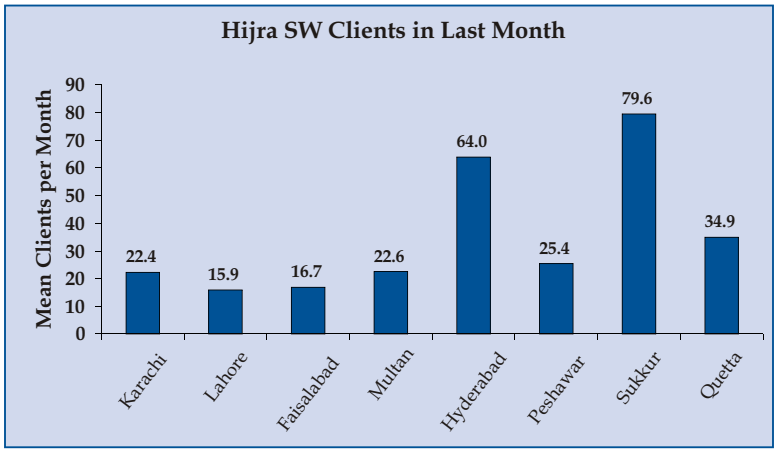
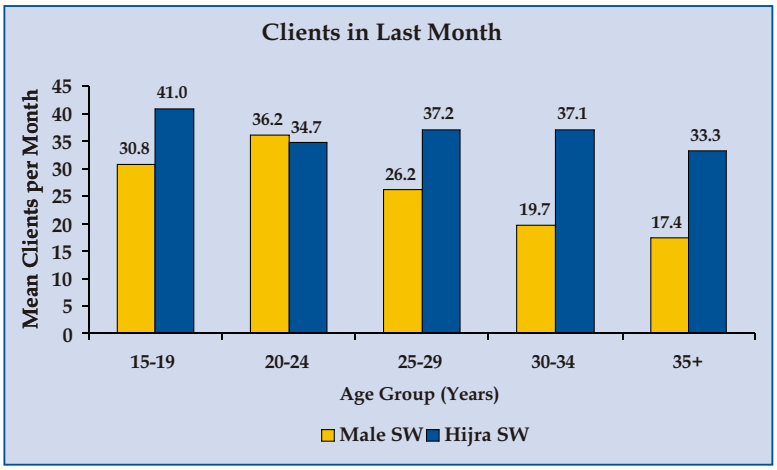


Figure C2.9 Average number of clients in the last one month among HSWs in 8 cities of Pakistan, 2005



Client volume among MSWs varied by age, with those aged <30 years having substantially more clients than older MSWs (Figure C2.10). Client volume did not vary much by age among HSWs.

Figure C2.10 Average number of clients in the last one month by age group among MSWs and HSWs in 8 cities of Pakistan, 2005



On average, MSWs earn approximately 2,800 rupees per month, and HSWs earn approximately 3,700 rupees per month (Table C2.3). Younger MSWs earn a higher monthly income from sex work than older sex workers, whereas there is not much difference in income by age among HSWs (Figures C2.11 and C2.12).

Figure C2.11 Average monthly sex work income by MSWs in 8 cities of Pakistan, by age group, 2005

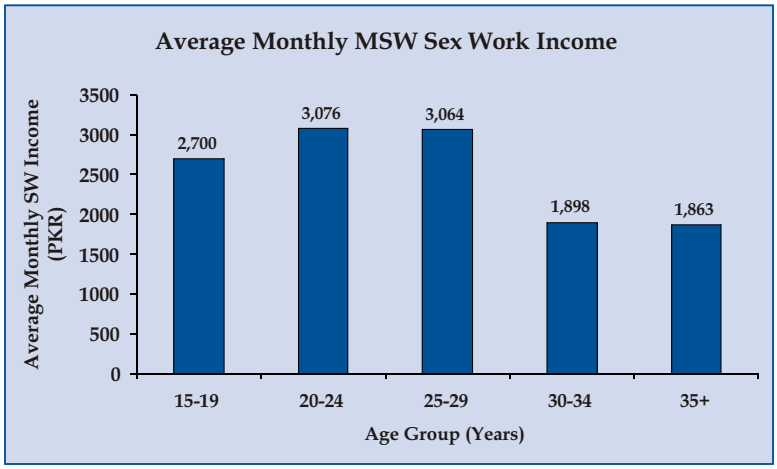
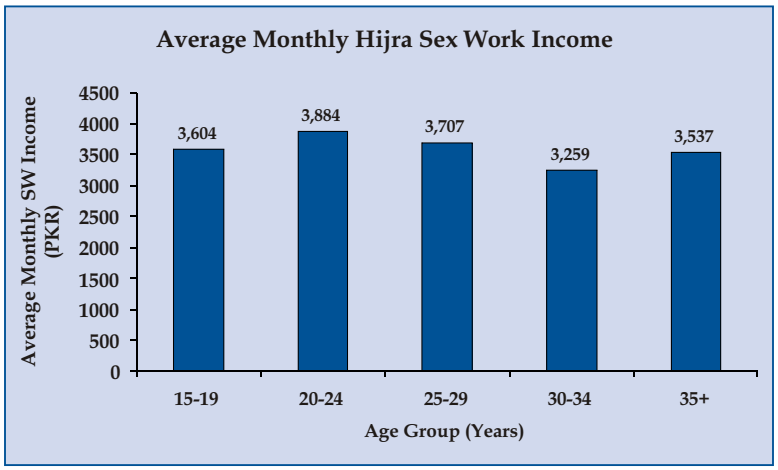
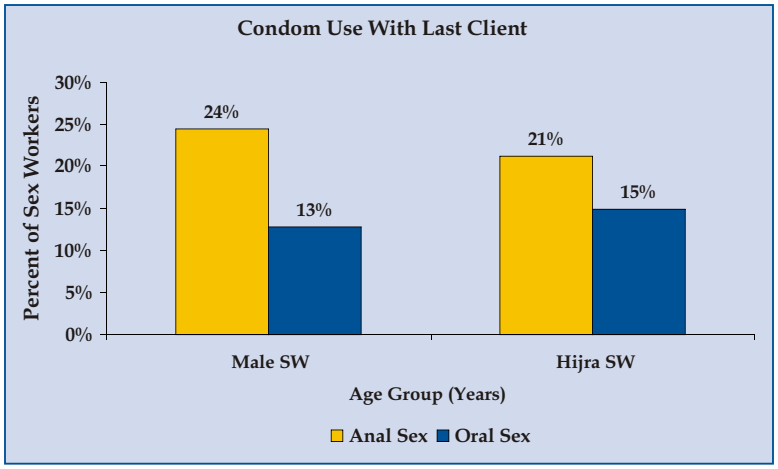


Figure C2.12 Average monthly sex work income by HSWs in 8 cities of Pakistan, by age group, 2005



Condom use by MSW and HSWs with their clients is generally very low. Less than 25% of each group reported using a condom for anal sex with their last client (Figure C2.13). Condom use for oral sex with clients was even less commonly reported.

Figure C2.13 Condom use by MSWs and HSWs with their most recent clients in 8 cities of Pakistan, 2005



Consistent condom use with clients was very low among both MSWs and HSWs. Less than 10% of each group reported always using condoms with their clients in all age groups (Figures C2.14 and C2.15). More than 50% of each group reported never using condoms with their clients in all age groups.

Figure C2.14 Condom use by MSWs with clients in the last month in 8 cities of Pakistan, 2005

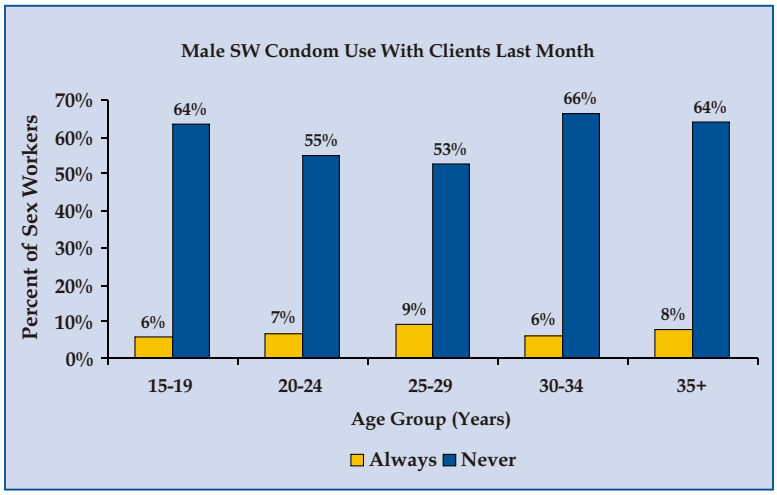
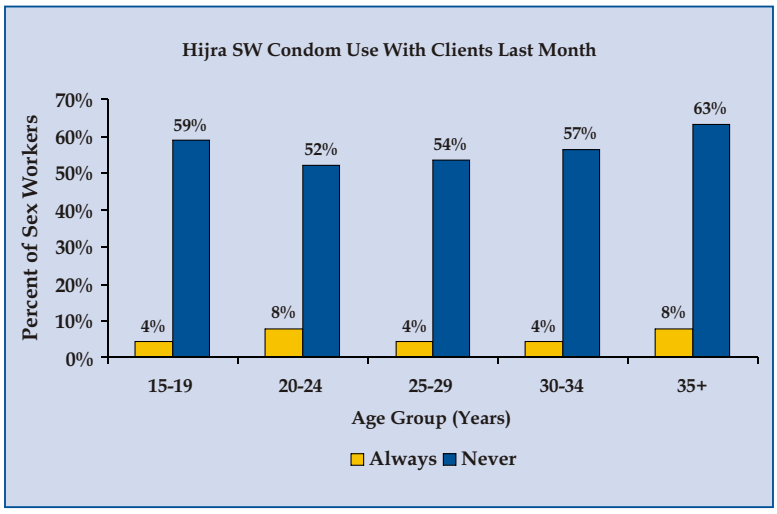
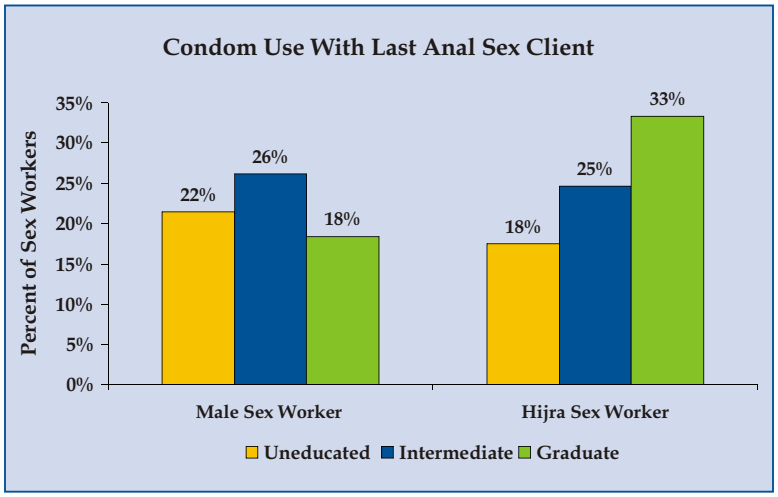


Figure C2.15 Condom use by HSWs with clients in the last month in 8 cities of Pakistan, 2005



Condom use is low in all education groups, though HSWs with more education tended to report more condom use than those less educated (Figure C2.16).

Figure C2.16 Condom use in anal sex by MSWs and HSWs with clients in the past month by education level in 8 cities of Pakistan, 2005



Condom use with clients is low in all cities, with the highest reported levels of consistent condom use in Quetta for both groups (Figures C2.17 and C2.18). Less than 5% of MSWs were carrying a condom at the time of interview, and less than HSWs carried a condom (Figure C2.19). Only in Quetta did more than10% of MSWs and HSWs have a condom with them at the time of the interview.

Figure C2.17 Condom use by MSWs with clients in the last month in 8 cities of Pakistan, 2005

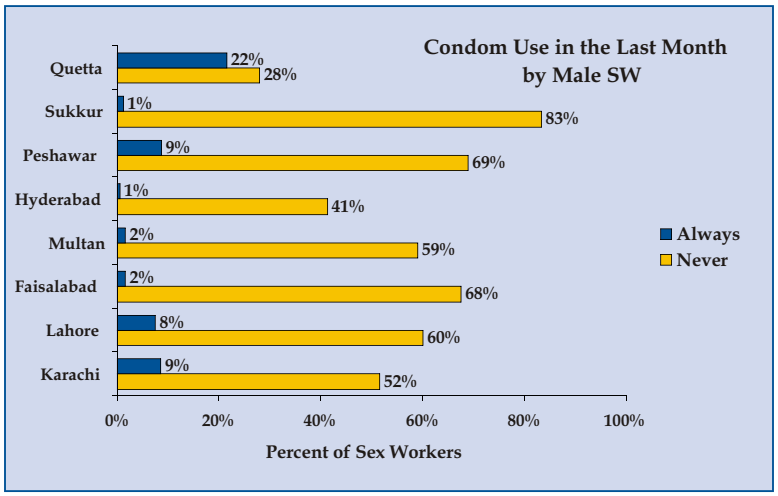


Figure C2.18 Condom use by HSWs with clients in the last month in 8 cities of Pakistan, 2005

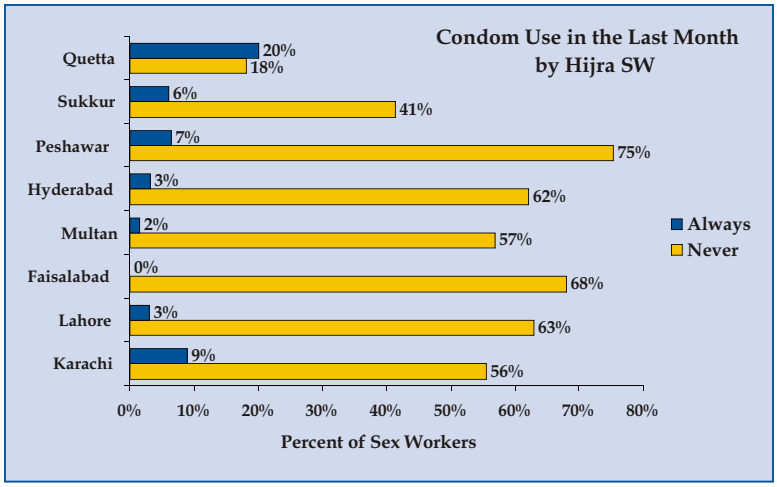
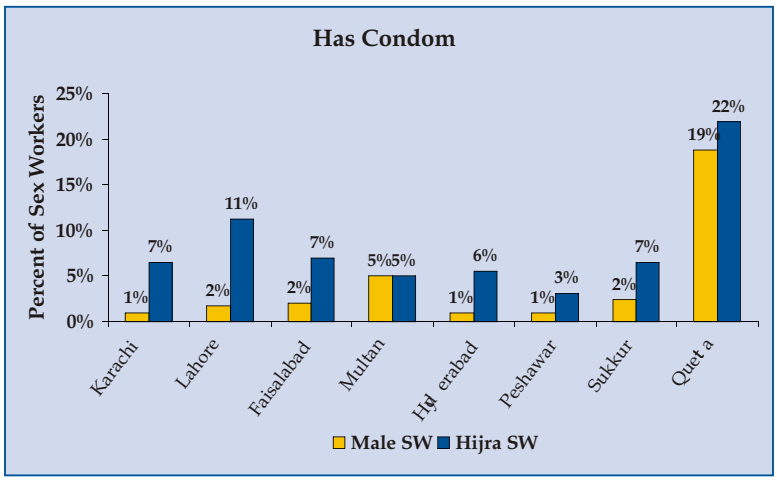
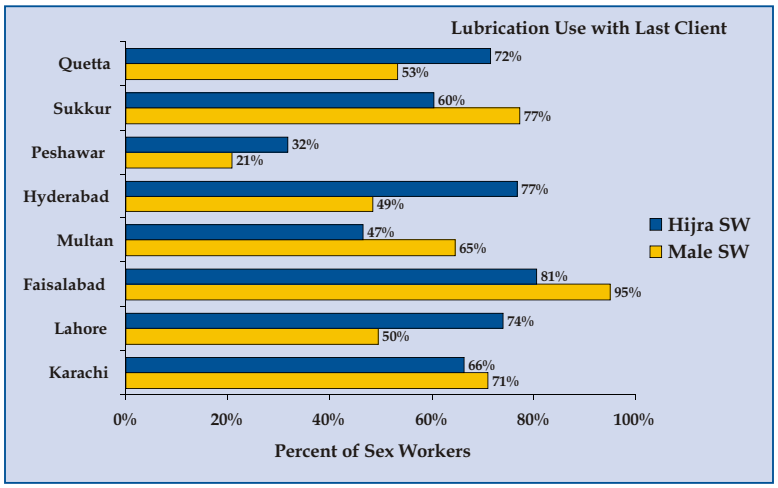


Figure C2.19 Proportion of MSWs and HSWs who were carrying a condom at the time of the survey interview in 8 cities of Pakistan, 2005



Approximately 50% of both MSWs and HSWs reported using some form of lubrication for anal sex with their last client, with those in Quetta reporting substantially less lubrication use than those in other cities (Figure C2.20).

Figure C2.20 Use of any type of lubrication in last anal sex encounter with a client by MSWs and HSWs in 8 cities of Pakistan, 2005



Overall, approximately 45% of MSWs and HSWs reported using alcohol and/or drugs in the context of a sexual encounter in the last six months. Substance use with sex tended to be more common among older sex workers (Figure C2.21), and was least common among those living in Quetta (Figure C2.22).

Figure C2.21 Use of alcohol and /or drugs by MSWs and HSWs in the context of sex in the past 6 months in 8 cities of Pakistan, by age group, 2005

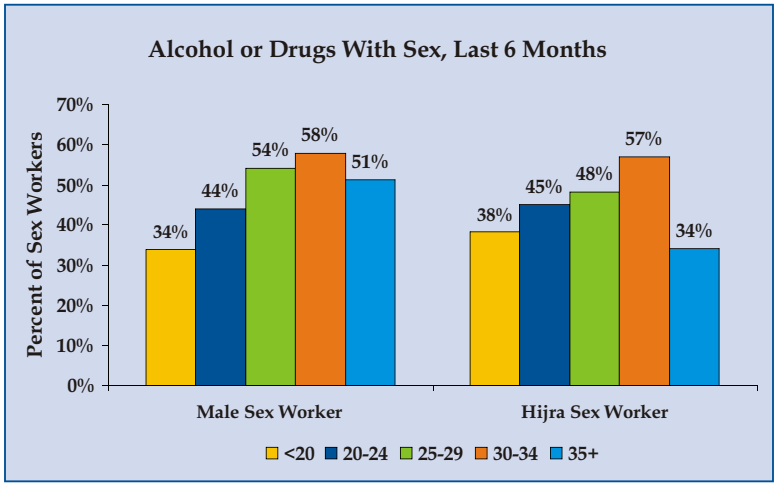
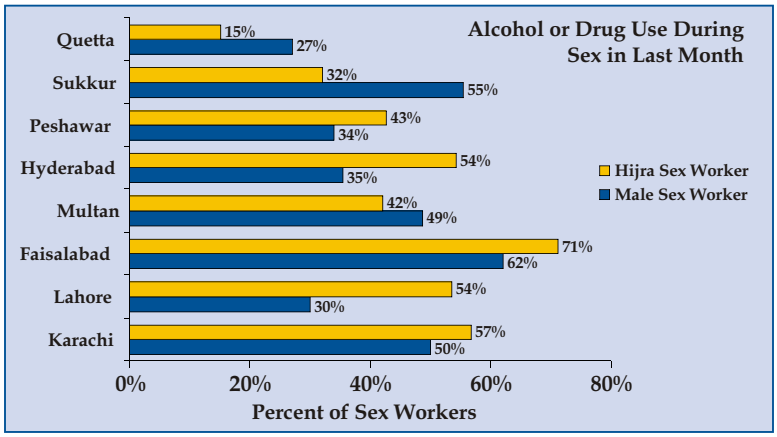


Figure C2.22 Use of alcohol and /or drugs by MSWs and HSWs in the context of sex in the past 6 months in 8 cities of Pakistan, 2005



C.2.4 HIV related knowledge, program exposure and violence

Approximately 70% of MSWs and HSWs had ever heard about HIV and/or AIDS (Table C2.4). Of those who had heard about HIV or AIDS, approximately 65% believe that a healthy looking person can be living with HIV. A large majority of those who had heard about HIV or AIDS, especially MSWs, knew that HIV can be transmitted through sexual intercourse, but less than half knew that injections can transmit HIV. Only about 60% reported condom use as an HIV prevention method.

Only 10% of MSWs and about 6% of HSWs had been tested for HIV, and less than 15% of each group knew where to receive an HIV test. A low proportion of both MSWs (27.9%) and HSWs (16.3%) perceived themselves to be at risk for acquiring HIV infection.

A little more than 50% of MSWs and HSWs were aware of other STIs, with around 10% reporting an STI in the past six months. About half of those reporting an STI reported that they received treatment.

Table C2.4 HIV related knowledge, program participation, and reported violence among MSWs and HSWs in 8 cities of Pakistan, 2005

Knowledge Area	Male Sex Workers (n=1,781)	Hijra Sex Workers (n=1,569)	Total for MSWs and HSWs (n=3,350)
Ever heard of HIV and/or AIDS	**69.9%**	**70.4%**	**70.1%**
Healthy looking person can have HIV / AIDS	66.2%	62.8%	64.7%
HIV transmitted by sexual intercourse	90.4%	78.5%	83.6%
HIV transmitted by sharp instrument / needle	49.7%	33.5%	40.4%
Condom is a method to prevent HIV transmission	63.7%	57.0%	59.9%
Sexual abstinence is a method to prevent HIV transmission	74.6%	64.6%	69.0%
Ever tested for HIV	10.0%	5.9%	8.1%
Know where to receive HIV test	14.4%	11.5%	13.0%
Perceive self to be at risk for HIV	27.9%	16.3%	22.5%
Aware of other sexually transmitted infections	**53.9%**	**54.7%**	**54.3%**
Self-reported STI in past 6 mos.	10.0%	8.0%	9.1%
Received treatment for reported STI	49.7%	61.0%	53.6%
Ever heard of HIV prevention programs	**9.5%**	**10.0%**	**9.7%**
Participated in HIV program	**2.2%**	**2.5%**	**2.4%**
Violence or other force for sex, past 6 months	**31.0%**	**29.7%**	**30.4%**
Arrested in the past 6 months	**19.7%**	**13.1%**	**16.6%**

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Only approximately 10% of MSWs and HSWs report that they have ever heard of HIV prevention programs in their city, and less than 3% report ever participating in an HIV program (Table C2.4). Knowledge about an HIV program was highest in Quetta, Karachi, Hyderabad and Peshawar (Figure C2.23).

Figure C2.23 Knowledge of HIV prevention programs by MSWs and HSWs in 8 cities of Pakistan, 2005

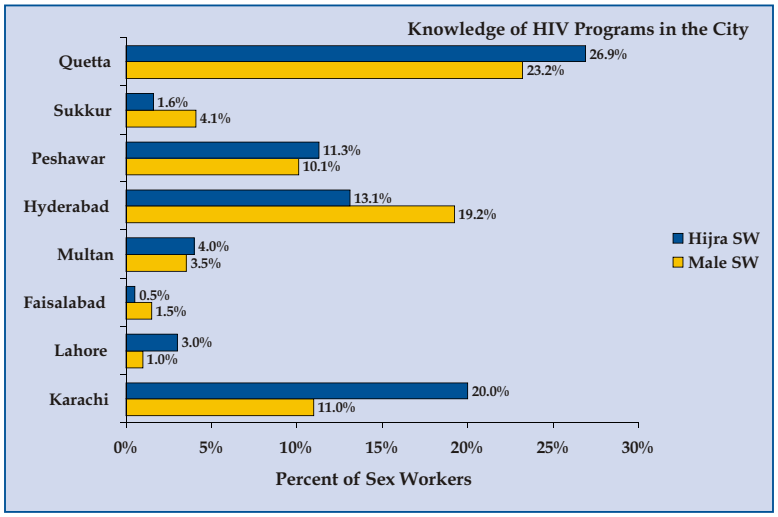


Figure C2.24 Self-perception of risk of HIV acquisition by MSWs and HSWs in 8 cities of Pakistan, 2005

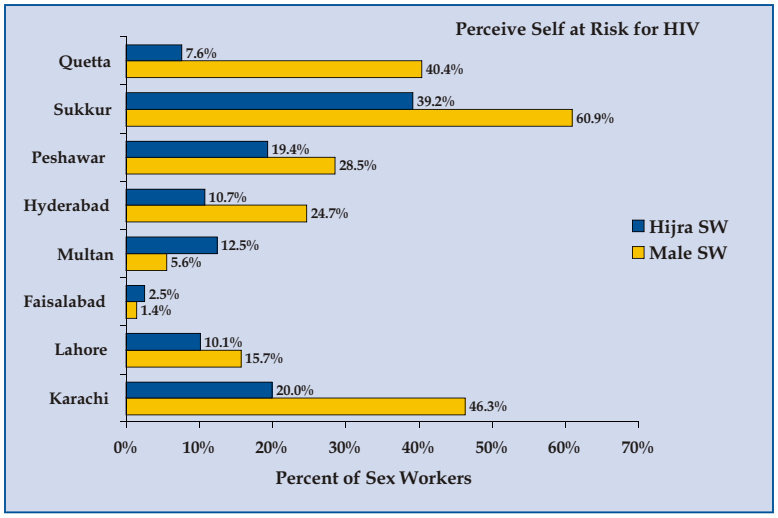


Figure C2.25 Self-reported violence in the past 6 months by MSWs and HSWs in 8 cities of Pakistan, 2005

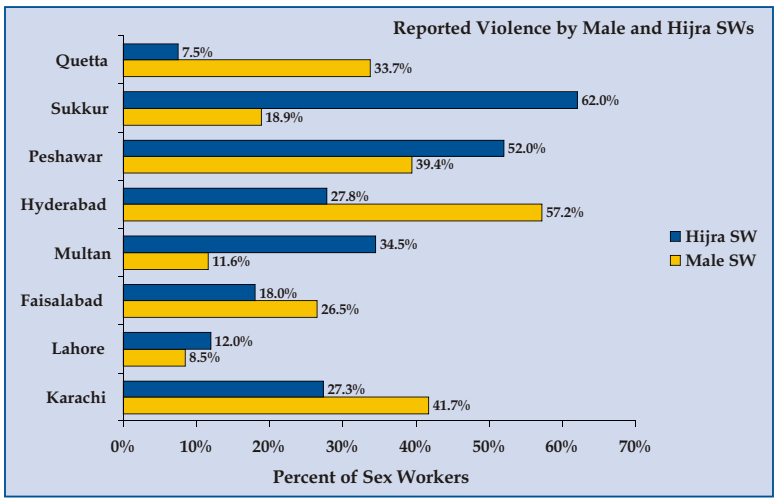
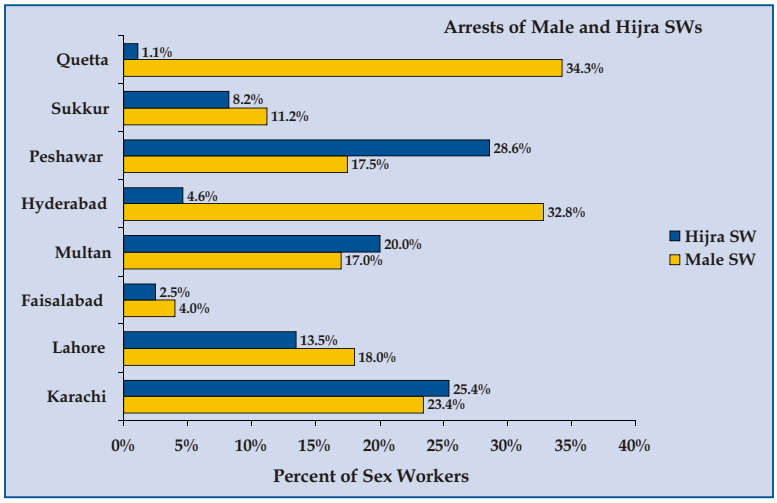


Figure C2.26 Self-reported arrests in the past 6 months of MSWs and HSWs in 8 cities of Pakistan, 2005



Approximately 20% of MSWs and 13% of HSWs reported having been arrested in the past six months (Table C2.4). Among MSWs, arrests were more commonly reported in Quetta (34.3%) and Hyderabad (32.8%), whereas self-reported arrests among HSWs were most commonly reported in Peshawar (28.6%) and Karachi (25.4%) (Figure C2.26).

C.2.5 HIV prevalence

The prevalence of HIV among male and Hijra sex workers was low. Among male sex workers, only 8 of 1,781 participants tested positive, yielding an estimated HIV prevalence of 0.4% (95 percent confidence interval, 0.2-0.9%). Among Hijra sex workers, 12 of 1,569 tested positive, for an estimated prevalence of 0.8% (95% CI, 0.4-1.3%). Table C2.5 shows the distribution and prevalence by city. The highest HIV prevalence was among male sex workers in Karachi (4.0%).

Table C2.5 HIV prevalence among MSWs and HSWs in 8 cities of Pakistan, 2005

City	Male Sex Workers			Hijra Sex Workers		
	Tested	Positive	Prevalence	Tested	Positive	Prevalence
Karachi	200	8	4.0%	199	3	1.5%
Lahore	200	0	-	200	1	0.5%
Faisalabad	200	0	-	200	1	0.5%
Multan	200	0	-	200	0	-
Hyderabad	203	0	-	199	2	1.0%
Peshawar	400	0	-	99	1	1.0%
Sukkur	167	0	-	185	3	1.6%
Quetta	209	0	-	187	1	0.5%
Total	**1,779**	**8**	**0.4%**	**1,469**	**12**	**0.8%**

Key Findings Male and Hijra Sex Workers

- The estimated relative size of the male sex worker (MSW) population in eight cities of Pakistan ranges from 1.0 per 1,000 men in Lahore to 4.8 per 1,000 men in Peshawar.
- The estimated relative size of the Hijra sex worker (HSW) population in eight cities of Pakistan ranges from 0.4 per 1,000 men in Peshawar to 3.7 per 1,000 men in Karachi.
- Most MSWs are literate, whereas approximately half of HSWs are uneducated.
- Most MSWs and HSWs started sex work at a young age, with the average age of starting sex work being 16.4 years for HSWs and 16.9 years for MSWs.
- On average, MSWs and HSWs service 2.4 clients in a working day, with little difference in daily client volume between these groups. Monthly client volume is somewhat higher among HSWs (36.3) than among MSWs (31.1).
- Client volume varies between cities, monthly client volume being highest for both MSWs and HSWs in Hyderabad, Sukkur and Quetta.
- Overall, condom use with clients is low; only 24% of MSWs and 18% of HSWs reported using a condom with their most recent client. Less than 10% of MSWs and HSWs reported always using condoms with clients.
- Condom use is low in all cities, with only Quetta having at least 20% of MSWs and HSWs reporting consistent condom use.
- Only about 10% of MSWs and HSWs had ever heard of HIV prevention programs in their city, and only 2.4% have ever participated in prevention programs.
- HIV prevalence remains generally low among MSWs (0.4% across all cities). The only HIV positive results are from Karachi where the HIV prevalence is estimated at 4%.
- HIV prevalence is also generally low among HSWs (0.8% overall), but HIV appears to be more evenly distributed with HIV positive reports coming from all but one city (Multan).

C.3 Injecting Drug Users

C.3.1 Population size and distribution

In the eight cities mapped, the total combined number of injecting drug users (IDUs) was estimated to be 24,390, with a range of approximately 20,770 to 28,010 (Table C3.1). The largest estimated IDU populations were in Karachi (12,300), followed by Faisalabad, Lahore and Sukkur. Overall, across all cities there was an estimated 4.7 IDUs per 1,000 adult men, with the highest relative populations in Faisalabad (10.8 per 1,000 adult men) and Sukkur (10.1 per 1,000 men). Quetta and Peshawar had the fewest IDUs per capita (1.1 and 1.2 per 1,000 men, respectively).

Table C3.1 Estimated size of the IDU population in 8 cities of Pakistan, 2005

City	Estimated number of IDUs			Mean IDUs per 1,000 adult men
	Minimum	Maximum	Mean	
Karachi	10,800	13,800	12,300	5.3
Lahore	1,900	3,200	2,550	2.1
Faisalabad	4,400	6,000	5,200	10.8
Multan	550	800	675	2.3
Hyderabad	850	1,100	975	3.6
Peshawar	240	330	285	1.2
Sukkur	1,900	2,600	2,250	10.1
Quetta	130	180	155	1.1
All Cities	***20,770***	***28,010***	***24,390***	***4.7***

C.3.2 Socio-demographic characteristics of IDUs

The IDUs surveyed were substantially older than FSWs, MSWs and HSWs. The average age of IDUs was 33.8, with almost 70% aged 30 years or more (Table C3.2). IDUs in Quetta (mean age 38.5) and Hyderabad (mean age 36.5) were the oldest, whereas those in Multan were the youngest (mean age 31.2) (Figures C3.1 and C3.3). On average, IDUs began injection drug use at approximately 28 years of age, and have been injecting drugs for about 6 years. IDUs in Peshawar have been injecting for the shortest time period (mean 2.6 years), while those in Hyderabad have been injecting for the longest duration (9.4 years) (Figure C3.1).

Almost half of the IDUs (49.3%) are unmarried, and most IDUs (54.4%) have no children (Table C3.2 and Figure C3.2). IDUs in Faisalabad are more likely to be married than in other cities, whereas those in Multan are least likely to be married (Figure C3.2). IDUs in Faisalabad are the least likely to have any children. The majority (53.5%) of IDUs are illiterate and only 1.1% have a graduate education. Highest levels of illiteracy are in Lahore (66.3%) and Faisalabad (60.5%), and lowest levels are in Multan (37%) (Figure C3.3). Most IDUs (83.5%) are local residents, and the majority (56.9%) lives at their own home (Table C3.2).

Table C3.2 Selected socio-demographic characteristics of IDUs in 7 cities of Pakistan, 2005

	IDUs (n=2,432)
Current Age	
<20 years	3.2%
20-24 years	9.1%
25-29 years	20.7%
30-34 years	38.9%
35+ years	28.1%
Mean Age	***33.8***
Marital Status	
Unmarried	49.3%
Married	44.7%
Separated/divorced	4.2%
Widowed	1.9%
Number of Children	
None	54.4%
1-2	19.0%
3-4	17.9%
5+	8.7%
Education / Literacy	
Illiterate	53.5%
Primary-Intermediate	45.4%
Graduate	1.1%
Living Arrangement	
Local Resident	83.5%
Lives at home	56.9%
Lives Alone	15.8%
With Family	54.3%
With Friends	29.3%
Average Monthly Income (PKR)	3,357

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Figure C3.1 Mean age of injection drug use initiation, duration of use and current age of IDUs in 7 cities of Pakistan, 2005

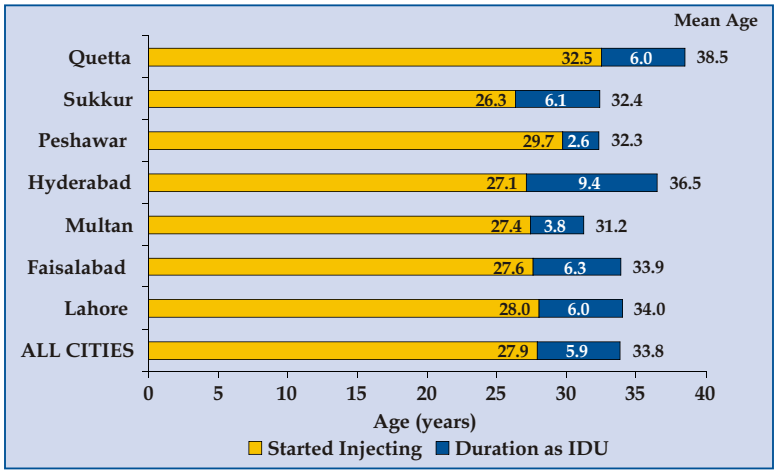


Figure C3.2 Proportion of IDUs married and with any children in 7 cities of Pakistan, 2005

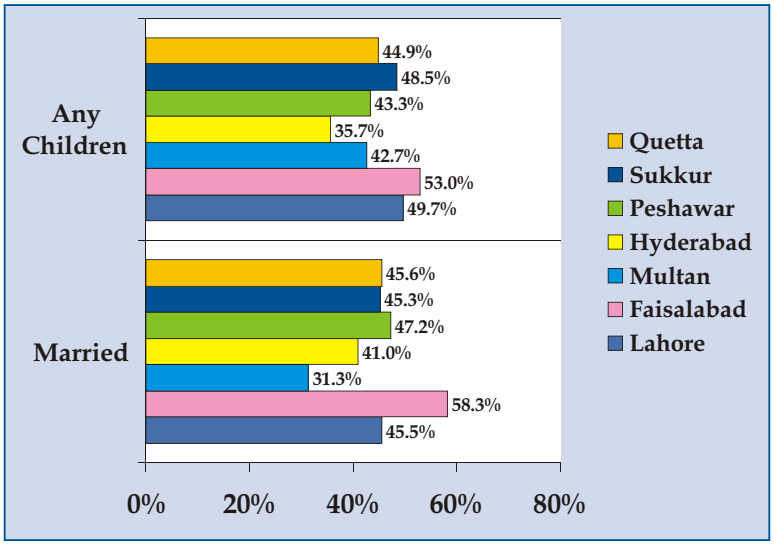
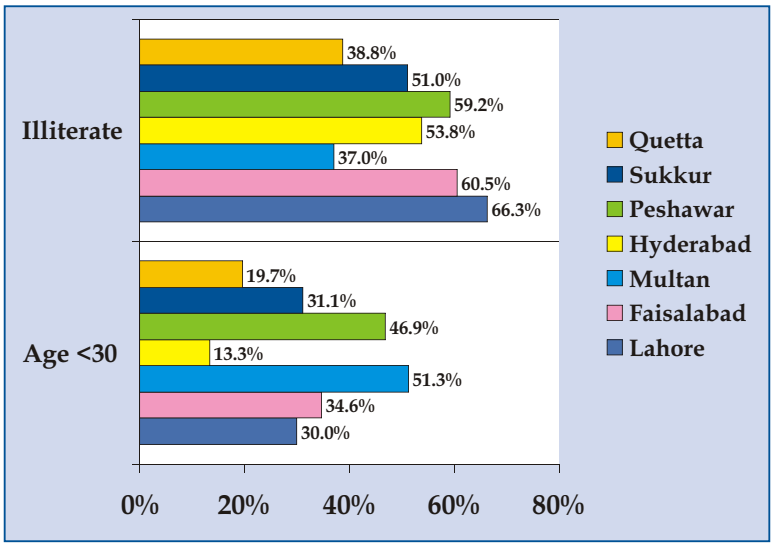
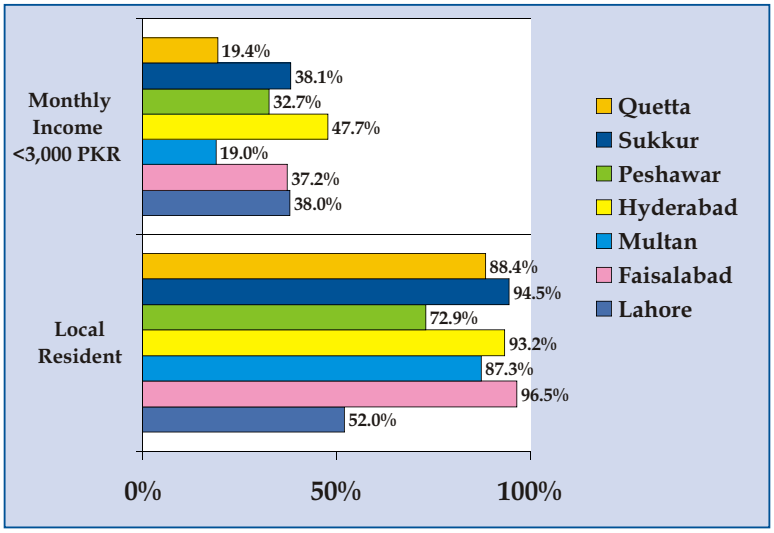


Figure C3.3 Age distribution and illiteracy levels among IDUs in 7 cities of Pakistan, 2005



The average monthly income of IDUs was 3,357 (PKR), with almost 35% making less than 3,000 PKR per month. IDUs in Quetta and Multan are least likely to report earning less than 3,000 rupees per month (Figure C3.4). Overall, the large majority of IDUs (83.5%) are local residents (Table C3.2). However, in Lahore only about half of the IDUs are local residents (Figure C3.4).

Figure C3.4 Residence and income of IDUs in 7 cities of Pakistan, 2005



C.3.3 IDU drug using practices

The key injecting drug using practices are show in Table C3.3. Over the past month the large majority of IDUs injected at least twice daily, with only 11.8% reporting injecting only once daily. On average, IDUs inject 2.3 times daily. Injection frequency differs little by age group (Figure C3.5), but there are substantial differences in injection frequency in different cities (Figures C3.6 and C3.7). Overall, IDUs in Hyderabad report the highest frequency of injection; 27% of them inject at least 4 times daily and 88% reported that they had injected at least twice on the previous day.

Most IDUs inject in public places, and usually do this with friends (see Table C3.3). The estimated mean number of daily injections is 2.3.

Table C3.3 Selected injection drug use patterns among IDUs in 7 cities of Pakistan, 2005

	All IDUs (n=2,431)		All IDUs (n=2,431)
Daily frequency of drug injection		**Last injection with**	
Once	11.8%	Family member(s)	0.7%
2-3 times	73.0%	Friends	67.4%
4 or more times	15.2%	Acquaintances	4.9%
		Strangers	0.3%
Number of injections yesterday (mean)	2.3	Alone	26.7%
Location of last injection		**Frequency of injection by "professional" last month**	
Park/street/open spaces	77.7%	Always	4.0%
Home	11.0%	Most of the time	9.2%
Mazars/darbar	9.7%	Sometimes	28.6%
Hotel/shop	1.6%	Never	57.9%
		Last injection by professional injector	23.7%

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Figure C3.5 Usual daily injection frequency by IDUs in the past one month in 7 cities of Pakistan, by age group, 2005

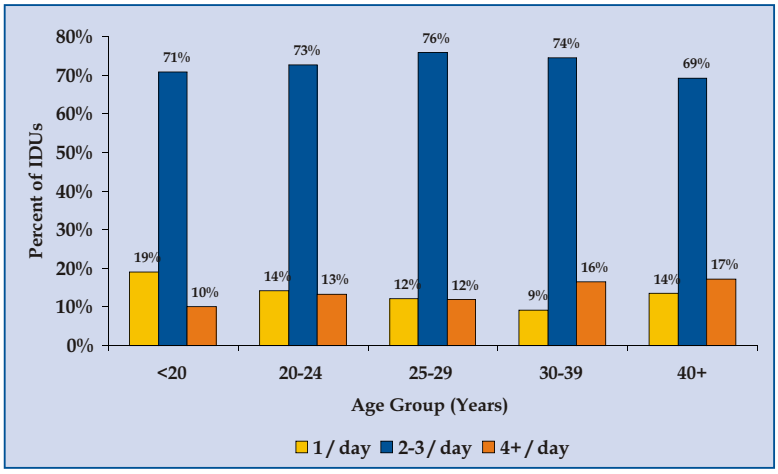


Figure C3.6 Usual daily injection frequency by IDUs in the past one month in 7 cities of Pakistan, by age group, 2005

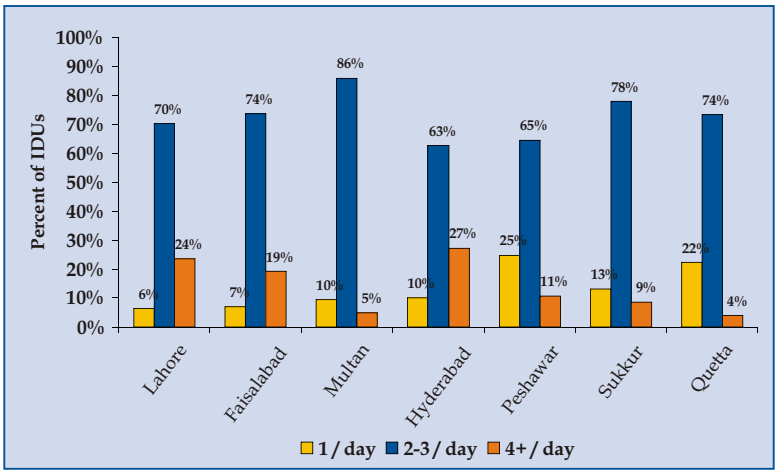
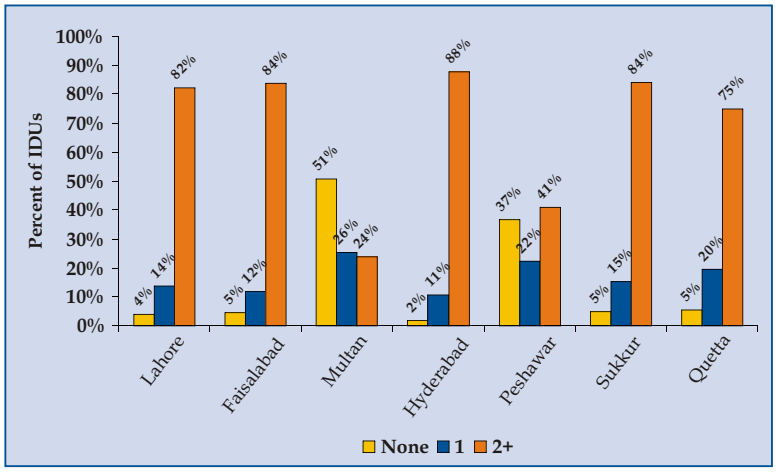


Figure C3.7 Number of injections yesterday by IDUs in 7 cities of Pakistan, 2005



A wide variety of drugs are injected, and the drug preferences differ between cities (Table C3.4). For example, "Tamgesic" in almost exclusively the drug of choice for IDUs in Peshawar, but is rarely used by IDUs in Hyderabad, Sukkur and Quetta. Overall, "Avil" is reported most often in most of the cities.

Table C3.4 Percent of IDUs reporting injecting various drugs in the past one month in 7 cities of Pakistan, 2005

Drug	Lahore	Faisalabad	Multan	Hyderabad	Peshawar	Sukkur	Quetta
"Avil"	90	82	89	98	0	81	73
"Diazepam"	81	74	77	24	0	18	1
"Tamgesic"	67	33	66	1	95	3	7
Heroin	22	2	2	86	0	36	86
"Sosegon"	5	1	49	7	0	0	11
"Bupron"	5	3	19	1	0	3	1
"Marzine"	21	2	1	4	0	0	4
"Restoril"	1	0	5	0	0	0	19

A sizable proportion of IDUs rely on "professional" injectors to assist them in injecting. This pattern is relatively stable across age groups (Figure C3.8), with about 13% reporting that they always or most often receive their injections from a "professional". However the pattern differs widely by location, and is much more common in Lahore and Faisalabad than in any of the other cities (Figure C3.9).

Figure C3.8 Frequency of receiving injections from a "professional" injector by IDUs in 7 cities of Pakistan, by age group, 2005

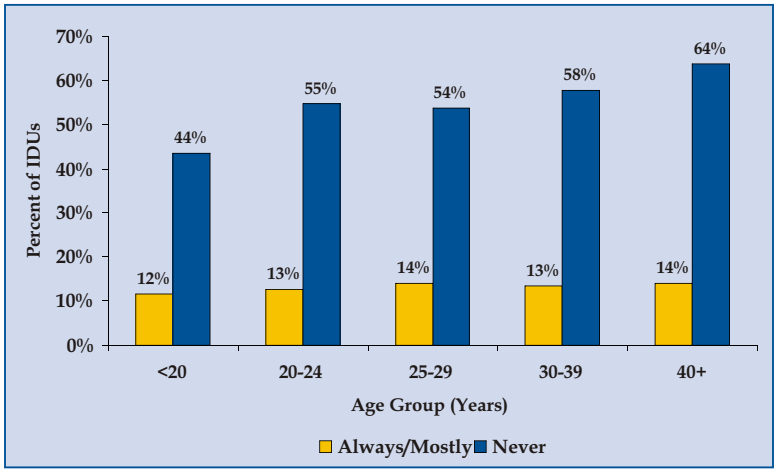
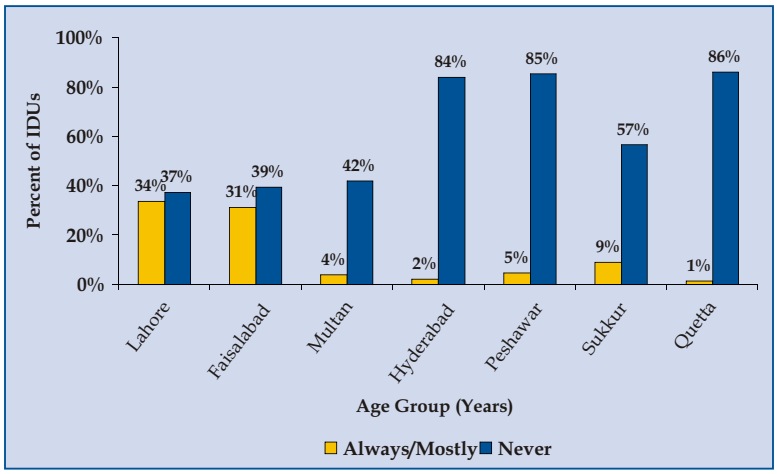


Figure C3.9 Frequency of receiving injections from a "professional" injector by IDUs in 7 cities of Pakistan, 2005



Only 21.9% of IDUs reported that they always used a new needle and syringe in the last month, and 12.7% reported never using a new needle/syringe (Table C3.5). More than one-third reported injecting with a previously used needle for their most recent injection, and almost half of IDUs shared a needle/syringe that they had used with another person. Approximately half of IDUs reported using equipment other than needle and syringe to assist in drug injection and 36% of them reported that this equipment was also used by others. Almost 40% reported that there were two or more IDUs who used the same needle/syringe before or after them with their most recent injection.

Table C3.5 Selected injection drug use practices among IDUs in 7 cities of Pakistan, 2005

	All IDUs (n=2,431)
Frequency of using a new needle/syringe last month	
Always	21.9%
Most of the time	23.5%
Sometimes	41.9%
Never	12.7%
Injected with a used needle, last injection	35.2%
Shared (passed) a used needle/syringe last injection	47.1%
Used other injection equipment last injection	51.0%
Injection equipment was also used by someone else	36.0%
Last injection, number of others using the same needle/syringe before or after	
None	53.2%
One	7.0%
Two	36.8%
More than two	3.0%

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Younger IDUs reported less use of a clean needle and syringe in the past month (Figure C3.10) and were the most likely to have injected with a used needle/syringe for their most recent injection (Figure C3.11). However, young IDUs (i.e. <20 years) were the least likely to report sharing their needle/syringe (Figure C3.12).

Figure C3.10 Frequency of using clean needle and syringe for drug injection in the past month by IDUs in 7 cities of Pakistan, by age group, 2005

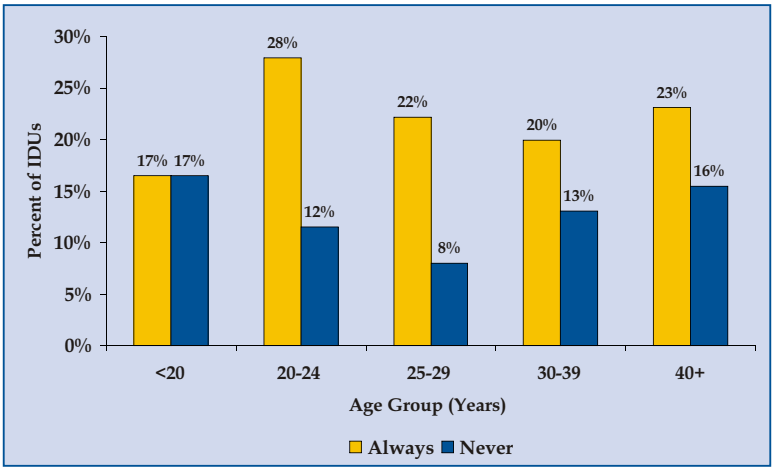


Figure C3.11 Injected with a previously used needle/syringe for the last injection by IDUs in 7 cities of Pakistan, by age group, 2005

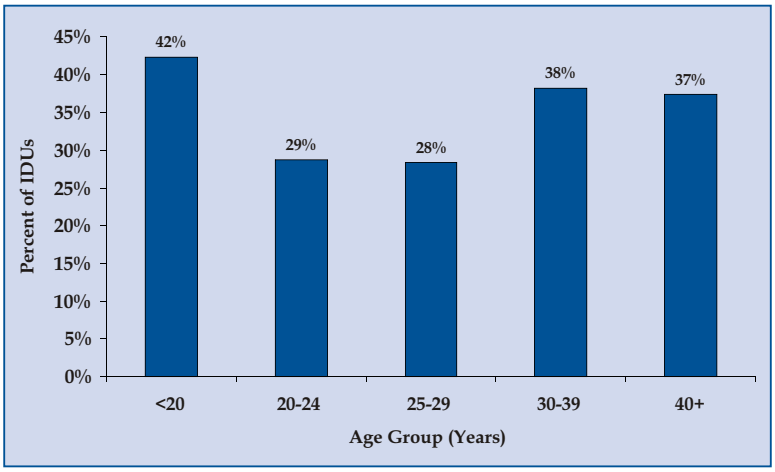
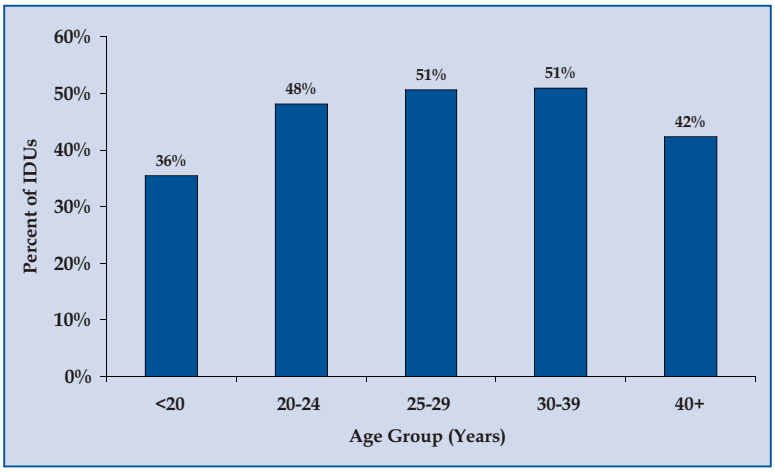
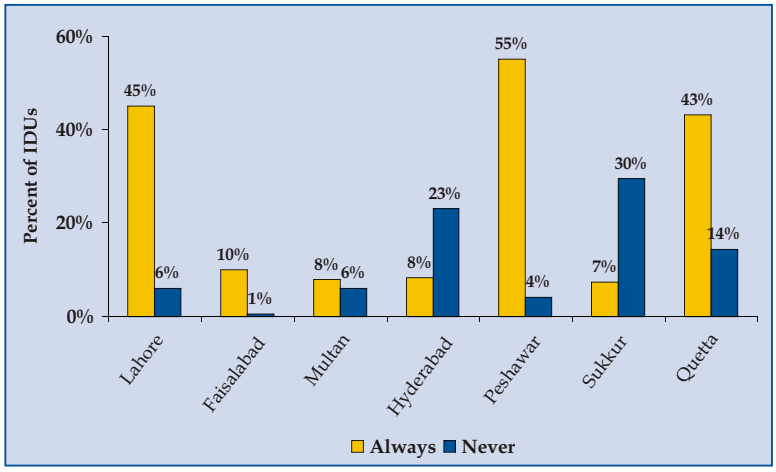


Figure C3.12 Shared (passed) syringe/needle with another user during last injection by IDUs in 7 cities of Pakistan, by age group, 2005



The use of clean needles and syringes for injection varied widely between cities (Figure C3.13). IDUs in Lahore, Peshawar and Quetta reported the highest levels of clean needle/syringe use by a wide margin. In all of the other cities, 10% or less of the IDUs reported that they always used clean needles/syringes.

Figure C3.13 Frequency of using clean needle and syringe for drug injection in the past month by IDUs in 7 cities of Pakistan, by age group, 2005



This pattern was observed in relation to the proportion of IDUs reporting that they injected with a previously used needle/syringe for their last injection. In this regard, 80% of IDUs in Hyderabad reported injecting with a used needle, and this was substantially higher than in any of the other cities which ranged from 7% (Lahore) to 47% (Multan) (Figure C3.14). IDUs in Hyderabad were also the most likely to share their used needles/syringes with others, with 83% reporting doing so in the context of their most recent injection (Figure C3.15).

Figure C3.14 Injected with a previously used needle/syringe for the last injection by IDUs in 7 cities of Pakistan, 2005

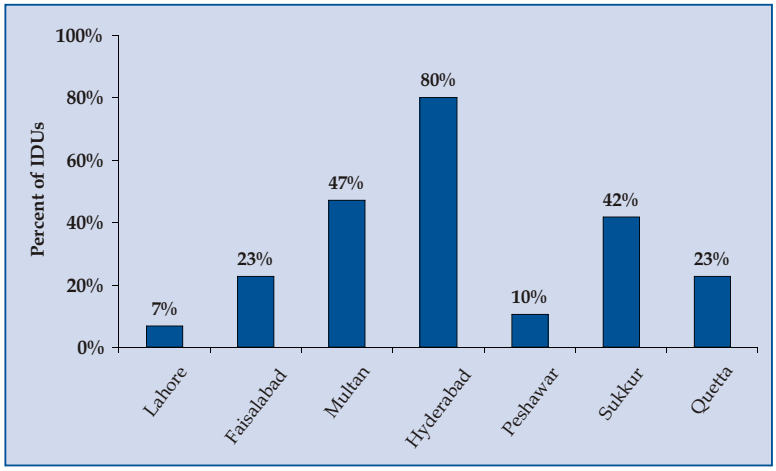
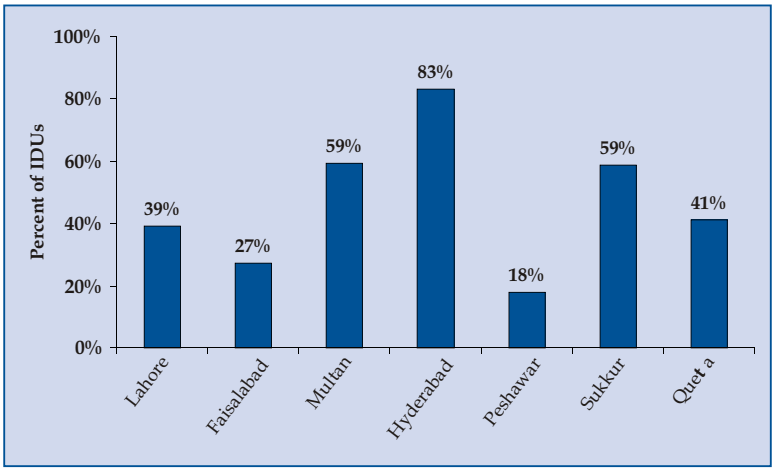
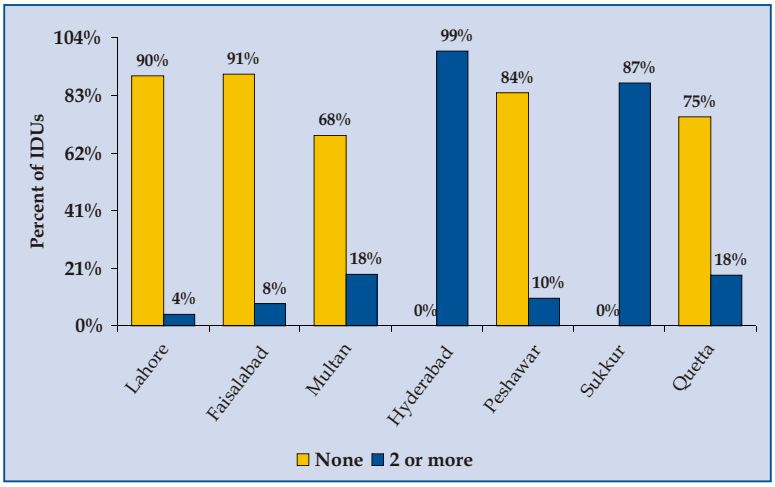


Figure C3.15 Shared (passed) syringe/needle with another user during last injection by IDUs in 7 cities of Pakistan, 2005



Almost all of the IDUs in Hyderabad, and the large majority (87%) in Sukkur reported that they either received or shared used needles/syringes in the context of their most recent injection (Figure C3.16)

Figure C3.16 Number of others using the same needle or syringe before or after the last injection by IDUs in 7 cities of Pakistan, 2005



C.3.4 Sexual behaviour patterns and practices

Approximately 90% of IDUs have been sexually active, with a mean age of sexual debut of 18.7 years (Table C3.6). Approximately 42% had a regular female partner in the past six months, and condom use with these partners was low. Only 25% reported condom use during their most recent sexual encounter and almost 65% reported never using condoms with these partners. Approximately 14% of IDUs reported paying a female for sexual intercourse in the past six months, and those who reported paying for sex reported an average of 7.1 such partners in the past six months. Condom use was only about 17% in the last commercial sex encounter with a female.

A similar proportion of IDUs (14.7%) reported paying a man or Hijra for sex in the previous six months. As with female sex workers, condom use was very low in sexual encounters with male and Hijra sex workers.

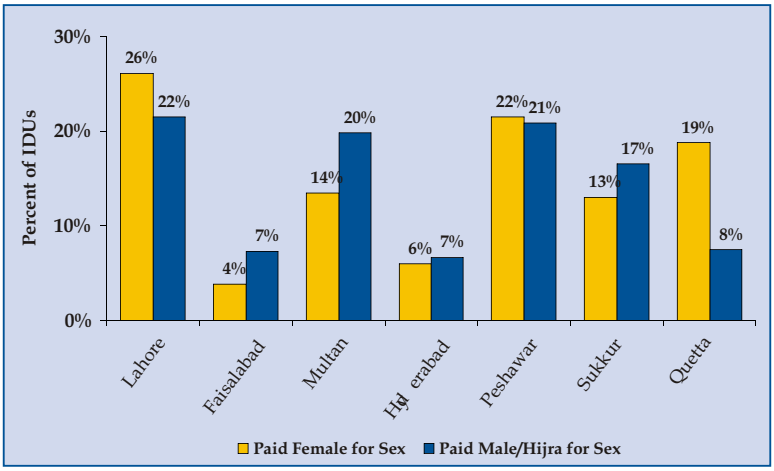
Table C3.6 Selected sexual behaviour patterns of IDUs in 7 cities of Pakistan, 2005

Sexual Patterns and Practices	All IDUs (n=2,431)
Age of first sexual intercourse (mean)	18.7
Proportion never having sexual intercourse	11.3%
Regular female sexual partner in past 6 months	42.2%
Condom use in last sex with regular female partner	25.0%
Frequency of condom use with regular female partner in past 6 months	
Always	5.3%
Sometimes	30.2%
Never	64.6%
Paid a female for sexual intercourse in the past 6 months	12.6%
Mean number of paid female partners (past 6 months)	7.1
Condom use in last sex with paid female sexual partner	16.6%
Paid a male or Hijra to have sex in the past 6 months	14.7%
Paid for anal sex with a man or Hijra	5.3%
Condom used in last sex with man or Hijra	12.5%
Lubricant use in last sex with a man or Hijra	15.0%

Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

There were significant differences between cities in the proportion of IDUs who reported paying for sex. IDUs in Lahore and Peshawar were the most likely to report sex work partners, whereas IDUs in Hyderabad and Faisalabad were the least likely to report this (Figure C3.17).

Figure C3.17 Proportion of IDUs paying females, males and Hijras for sex in the last 6 months in 7 cities of Pakistan, 2005



C.3.5 HIV related knowledge, program exposure and violence

Approximately two-thirds of IDUs hadever heard of HIV or AIDS, and of these just over half believe that a health looking person can be living with HIV (Table C3.7). Most IDUs who had eard about HIV or AIDS knew that it can be transmitted by sex and through needles. However, fewer than half identified condoms as a method for HIV prevention. Only about one in three IDUs perceive themselves to be at risk for acquiring HIV.

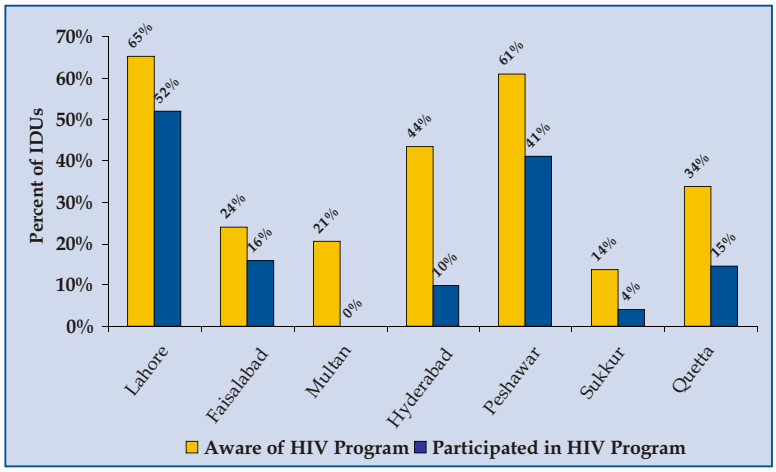
Overall, approximately 37% of IDUs had ever heard of an HIV program in their city, and about 19% reported participating in such a program. However, this differed substantially between cities. Knowledge and participation was substantially higher in Lahore and Peshawar than in the other cities (Figure C3.18).

Table C3.7 HIV related knowledge, program participation, and reported violence among IDUs in 7 cities of Pakistan, 2005

Knowledge Area	All IDUs (n=2,431)
Ever heard of HIV and/or AIDS	**66.6%**
Healthy looking person can have HIV / AIDS	54.5%
HIV transmitted by sexual intercourse	90.9%
HIV transmitted by sharp instrument / needle	76.6%
Condom is a method to prevent HIV transmission	46.6%
Sexual abstinence is a method to prevent HIV transmission	72.7%
Know where to receive HIV test	13.4%
Perceive self to be at risk for HIV	33.9%
Aware of other sexually transmitted infections	**46.6%**
Self-reported STI in past 6 mos.	6.8%
Received treatment for reported STI	57.8%
Ever heard of HIV prevention programs	**36.6%**
Participated in HIV program	**19.1%**
Violence or other force for sex, past 6 months	**7.8%**
Arrested in the past 6 months	**16.6%**

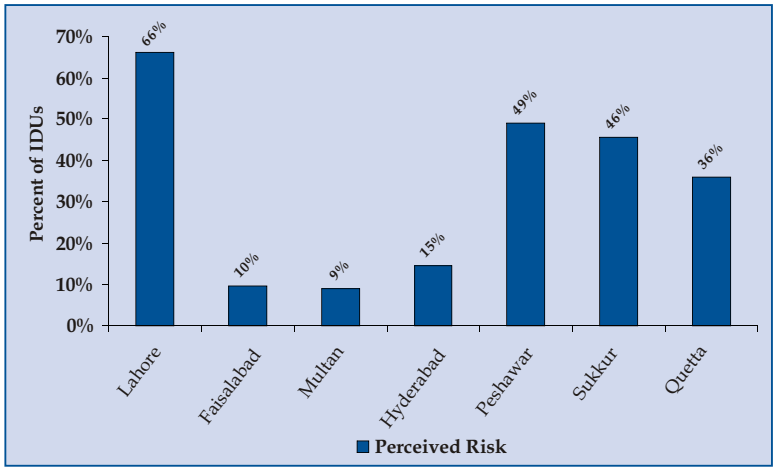
Note: Bolded figures are based on the total sample; un-bolded figures are based on positive responses to the initial question.

Figure C3.18 Proportion of IDUs who are aware of and have participated in HIV prevention programs in 7 cities of Pakistan, 2005



Self-perception of risk was also highest in Lahore (66%), followed by Peshawar and Sukkur. Risk perception was very low in Multan, Faisalabad and Hyderabad (Figure C3.19).

Figure C3.19 Self-perception of risk of HIV acquisition by IDUs in 7 cities of Pakistan, 2005



Overall, approximately 8% of IDUs reported that they had been subjected to violence in the past six months, but this was much more common in Lahore (22%) than in other cities (Figure C3.20). About 17% reported that they had been arrested in the past six months, and this was most commonly reported in Sukkur and Peshawar (Figure C3.21).

Figure C3.20 Self-reported violence in the past 6 months by IDUs in 7 cities of Pakistan, 2005

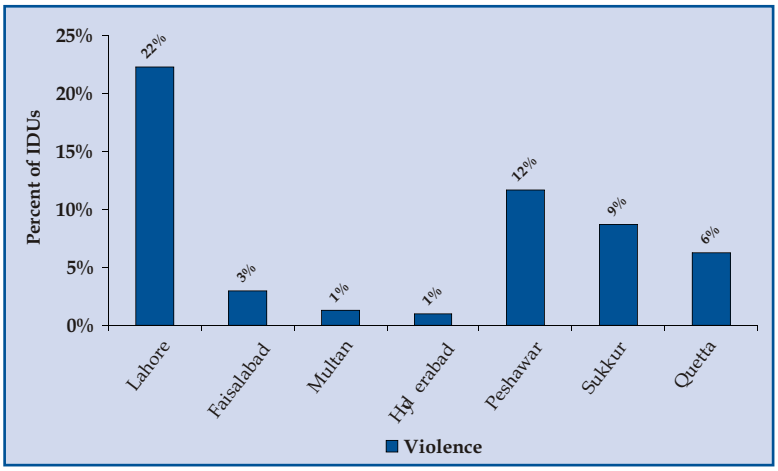
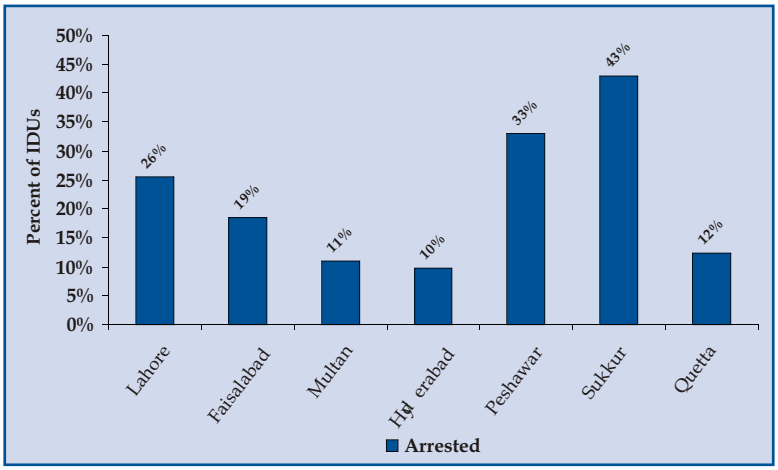


Figure C3.21 Self-reported arrests in the past 6 months of IDUs in 7 cities of Pakistan, 2005



C.3.6 HIV prevalence

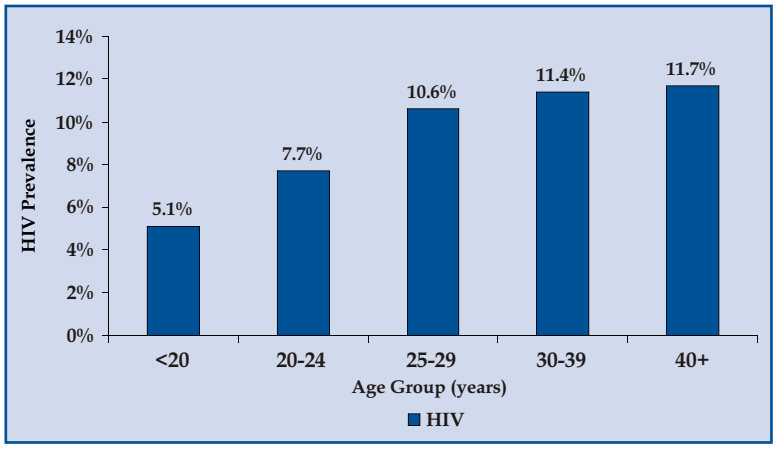
The overall prevalence of HIV among IDUs was 10.8%, but there were wide variations between cities (Table C3.8). The highest prevalence was in Hyderabad (25.4%), followed by Sukkur (19.2%). HIV prevalence was very low in Multan and Peshawar.

Table C3.8 HIV prevalence among IDUs in 7 cities of Pakistan, 2005

City	Injecting Drug Users		
	Tested	Positive	Prevalence (95% CI)
Lahore	400	15	3.8% (2.2-6.0%)
Faisalabad	400	53	13.3% (10.2-17.0%)
Multan	400	1	0.3% (0.0-1.4%)
Hyderabad	398	101	25.4% (21.2-30.0%)
Peshawar	284	1	0.4% (0.0-1.9%)
Sukkur	402	77	19.2% (15.4-23.3%)
Quetta	147	14	9.5% (5.5-15.5%)
Total	**1,779**	**262**	**10.8% (9.6-12.1%)**

HIV prevalence increases with age, with IDUs over age 40 having more than twice the prevalence (11.7%) than those less than 20 (5.1%) (Figure C3.22).

Figure C3.22 HIV prevalence by age group among IDUs in 7 cities of Pakistan, 2005



Higher HIV prevalence was associated with increased injection frequency (Figure C3.23) and unsafe injection practices (Figure C3.24).

Figure C3.23 HIV prevalence in relation to the usual injection frequency of IDUs in 7 cities of Pakistan, 2005

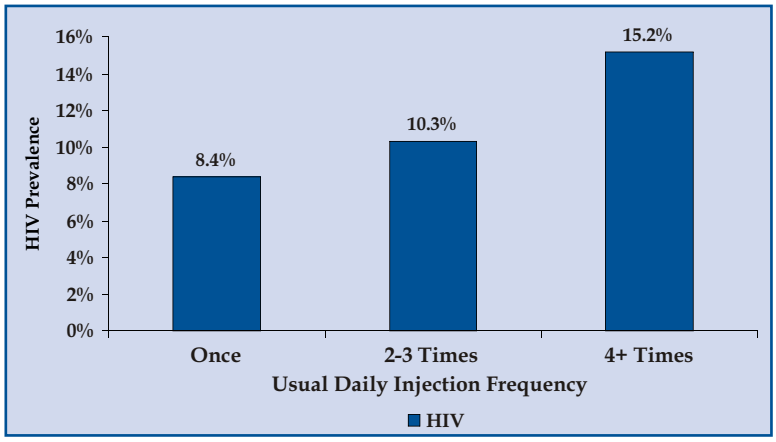
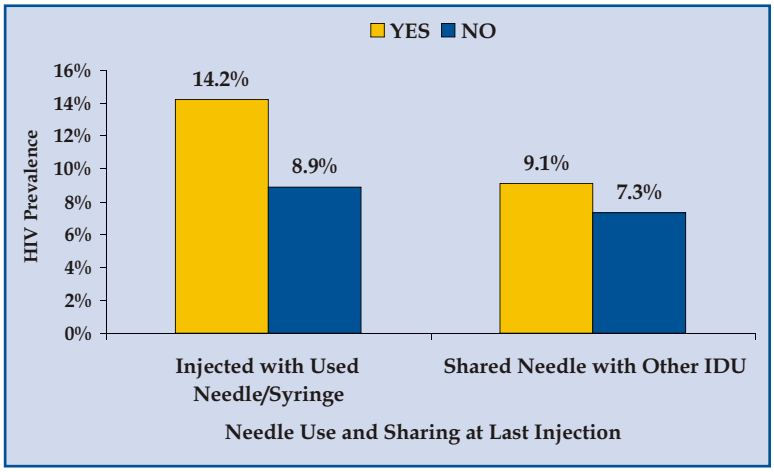
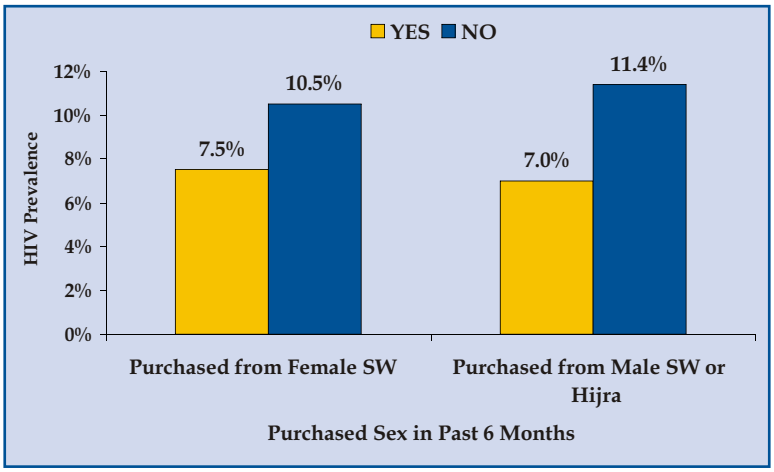


Figure C3.24 HIV prevalence in relation to needle sharing practices among IDUs in 7 cities of Pakistan, 2005



Higher HIV prevalence was not associated with purchasing sex from either female sex workers or male and Hijra sex workers (Figure C3.25).

Figure C3.25 HIV prevalence in relation to purchasing sex in the past 6 months among IDUs in 7 cities of Pakistan, 2005



Key Findings Injecting Drug Users

- Overall, there are an estimated 4.7 injecting drug users (IDUs) per 1,000 adult men across the eight cities, with a range of 1.1 per 1,000 in Quetta to 10.8 per 1,000 in Faisalabad.
- Most IDUs are illiterate, and almost half are unmarried.
- On average, IDUs started injecting drugs in their mid-twenties, and are currently over 30 years of age.
- The large majority of IDUs (85%) inject drugs at least twice a day, and most injecting occurs on the street or in other public places.
- A variety of drugs are injected, with variations between cities. Heroin use is prominent in only Hyderabad and Quetta, and used to a lesser degree in Sukkur and Lahore.
- Safe injection practices are uncommon. Only about 22% of IDUs report always using a new needle and syringe for injection, and more than 50% report that they use a new needle and syringe "sometimes" or "never".
- Almost 50% of IDUs report that they passed their used needle/syringe to another IDU at their last injection, and almost 40% report that more than two IDUs used the same needle/syringe at the last injection.
- The safety of injection practices varies widely between cities. In Lahore, Peshawar and Quetta, more than 40% of IDUs report that they always use new needle/syringe, whereas 10% or less of IDUs report this from each of the other cities.
- Unsafe injection practices are particularly common in Hyderabad and Sukkur, with a high percentage of IDUs in those cities reporting needle sharing.
- Overall, almost 37% of IDUs had ever heard of HIV prevention programs in their city, but only 19% had ever participated in prevention programs.
- Participation in HIV prevention programs was highest in Lahore and Peshawar, and lowest in Hyderabad, Sukkur and Multan.
- Overall, HIV prevalence was 10.8% among IDUs, with high variability between cities. The highest prevalence was in Hyderabad (25.4%) followed by Sukkur (19.2%) and Faisalabad (13.3%). Prevalence was less than 1% in Peshawar and Multan.
- Among IDUs higher HIV prevalence was associated with older age, higher injection frequency and needle/syringe sharing.

D. Transmission dynamics and epidemic potential

In this section, data analysis focuses on the implications of the size, distribution and behaviours of the key populations on the HIV transmission dynamics.

D.1 Epidemic Potential

D.1.1 Relative sizes of the key populations

The absolute and relative sizes of the key populations differ substantially between the cities surveyed. As illustrated in Figures D1.1 and D1.2, there are substantially higher absolute numbers of FSWs in Karachi (11,550) and Lahore (14,150) than in any of the other cities. This is due mainly to their much larger overall population than the other cities. However, the mapping data also show that the size of the different key populations within each of the cities also differs widely. For example, in Karachi the number of IDUs (12,300) exceeds the estimated number of FSWs, whereas there are much fewer IDUs in Lahore in relation to the size of their FSW population (Figure D1.1). This example shows that in some cities, FSWs are the predominant key population (e.g. Lahore, Multan, Hyderabad, Quetta), whereas in other cities IDUs are a larger key population (e.g. Faisalabad and Sukkur). In some cities, MSW and Hijra form an important key population (e.g Karachi, Hyderabad and Peshawar), whereas in other cities the relative population of MSW and Hijras is much lower (e.g. Sukkur and Lahore).

Figure D1.1 Estimated size of the FSW, MSW, HSW and IDU populations in cities of Pakistan, 2005

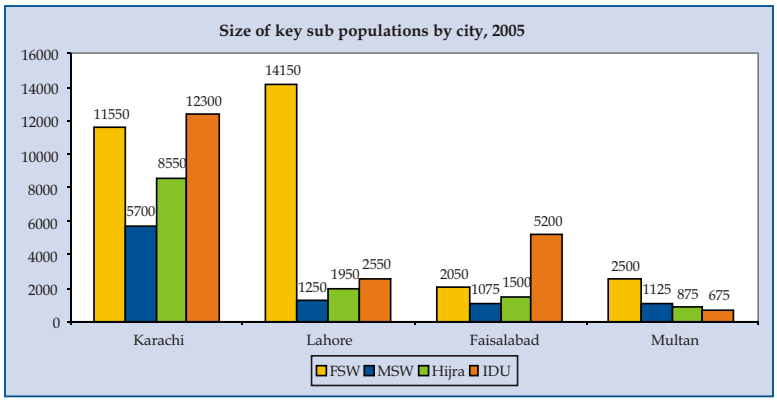
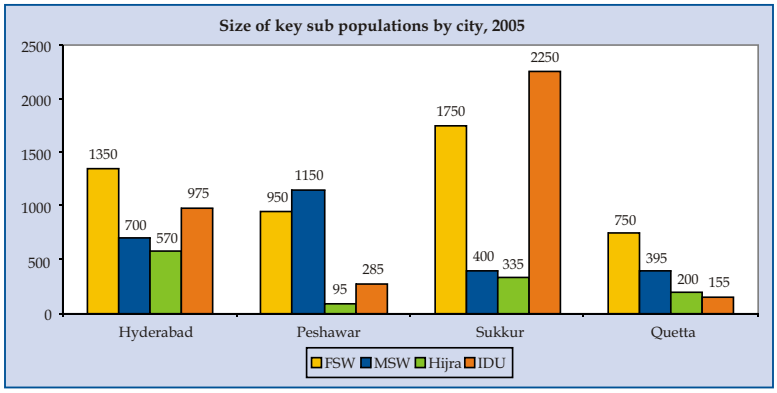


Figure D1.2 Estimated size of the FSW, MSW, HSW and IDU populations in cities of Pakistan, 2005



Because the absolute population size differs between the cities, to assess the potential impact of these key sub-populations it is necessary to adjust their estimated populations in relation to the overall population size. Figures D1.3 and D1.4 show the size of the key populations per 1,000 adult men in each of the eight cities. The relative size of the FSW population ranges from 4 per 1,000 men in Peshawar, to 11.4 per 1,000 men in Lahore. There is also substantial variability in the per capita sizes of other key populations. MSWs and HSWs for example range from 3.3 per 1,000 men in Sukkur to 6.2 per 1,000 in Multan. And IDUs differ considerably from 1.1 per 1,000 men in Quetta to 10.8 per 1,000 men in Faisalabad.

Figure D1.3 Relative size of FSW, MSW, HSW and IDU populations in cities of Pakistan, 2005

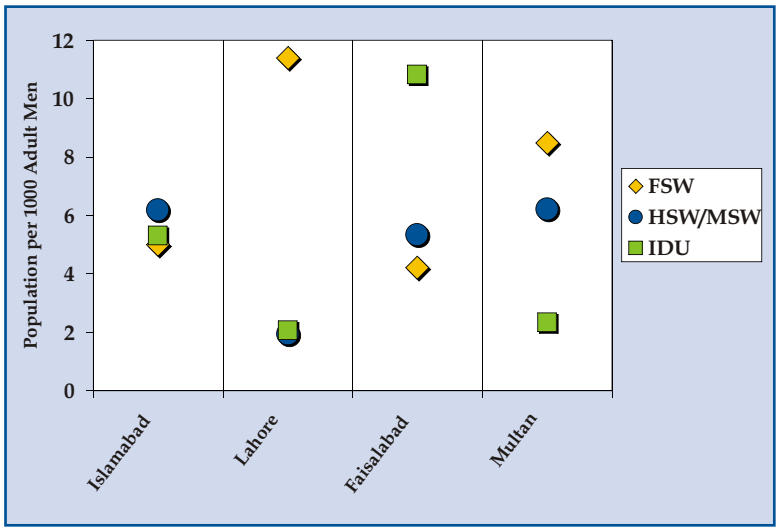
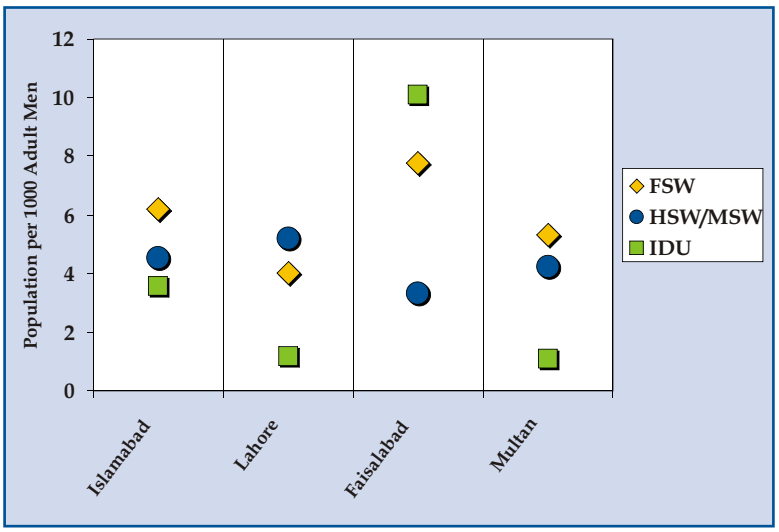


Figure D1.4 Relative size of FSW, MSW, HSW and IDU populations in cities of Pakistan, 2005



D.1.2 Bridge populations

By combining the estimated size of different key populations and their reported number of sexual partnerships, it is possible to estimate the total number of sexual partnerships involving each of the key sub-populations in a month. These analyses are presented in Figures D1.5 and D1.6, and show that there is substantial variability within and between cities in terms of the total number of sexual partnerships with different key populations. These analyses indicate the relative sizes of the "bridge" populations from the key sub-populations in each city, which is an important guide to the basic epidemic potential related to each group. From a program perspective, it helps to focus prevention priorities. For example, in Lahore there are an estimated 653,000 sexual partnerships with FSWs each month, compared to only 10,000 for MSWs and 22,000 for Hijras. This suggests that preventing transmission in the context of female sex work will be an important program strategy to limit the growth of the epidemic in Lahore. Similarly, in Multan and Sukkur there are many more sexual partnerships with FSWs than with either MSWs or Hijras. In contrast, in Karachi and Faisalabad, the number of sexual partnerships with MSWs and Hijras is similar to the number with FSWs, and in Hyderabad and Peshawar there are considerably more partnerships with MSWs in each month than there are with FSWs. This suggests that the HIV epidemic growth will be substantially influenced by transmission in the context of the male and Hijra sex work networks in these cities, and prevention programs focused on these networks will be key to limiting the size of the epidemic.

Figure D1.5 Estimated number of monthly sexual partnerships with FSWs, MSWs and HSWs in a month in cities of Pakistan, 2005

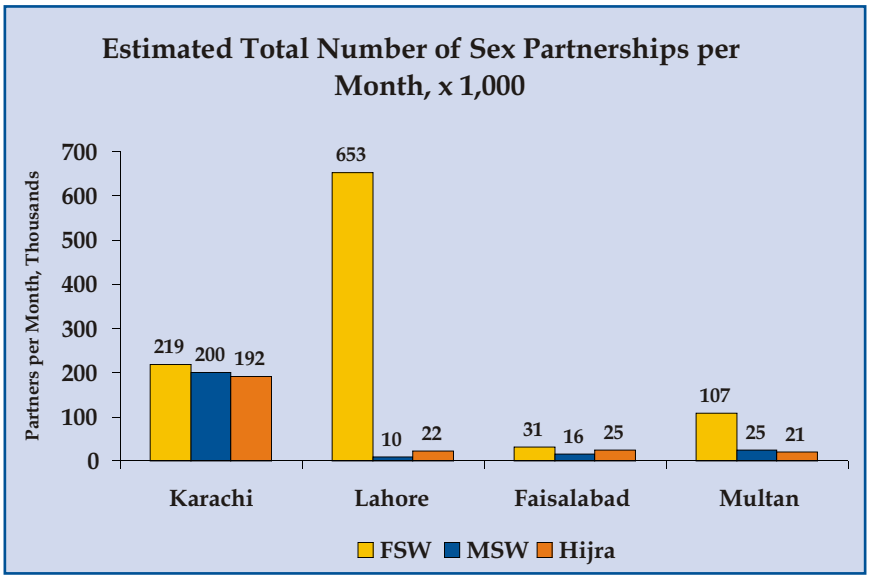
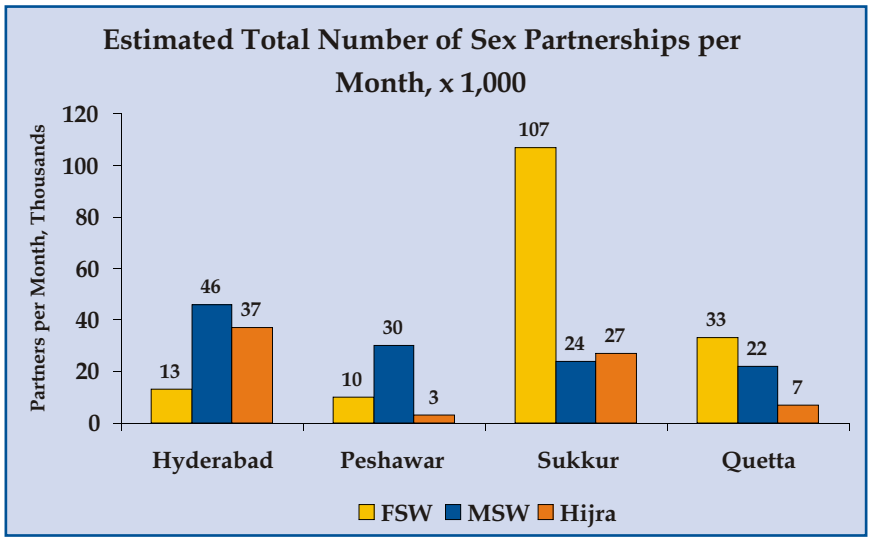


Figure D1.5 Estimated number of monthly sexual partnerships with FSWs, MSWs and HSWs in a month in cities of Pakistan, 2005



D.1.3 Network interactions between key sub-populations

In addition to assessing the size of the "bridge populations" between key sub-populations and lower risk populations, it is important to assess the extent of sexual networking between the key sub-populations in a given location. When there are substantial network interactions, the rapid emergence of HIV within one sub-population can result in a more rapid rise in HIV prevalence in other sub-populations, which will have a wider impact on epidemic growth because multiple sexual networks are affected. For example IDUs in these surveys reported a relatively small number of sexual partners, so did not have a substantial sexual "bridge" population that would serve to directly expand the epidemic. However, the high risk of HIV transmission within IDU networks, and the sexual networking between IDUs and other key sub-populations such as FSWs and MSWs could result in a more rapid rise in HIV prevalence in those high-risk sexual networks, thus resulting in a more rapid expansion of the overall epidemic.

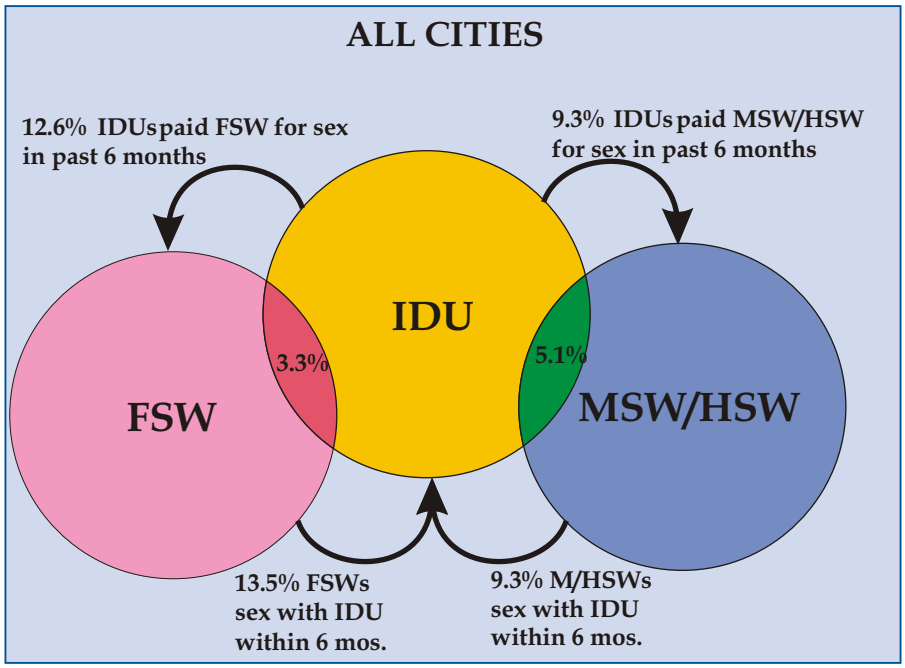
The data from this survey suggest that in some cities, there are important links between key sub-populations, as illustrated in the following figures. Overall, approximately 3.3% of FSWs and 5.1% of MSWs and HSWs report that they are also IDUs (i.e. have injected drugs in the past six months). Moreover, 13.5% of FSWs and 9.3% of MSWs and HSWs report having sex with an IDU in the previous six months, and 12.6% of IDUs report paying an FSW for sex and 9.3% report paying an MSW or HSW for sex in the previous six months. As the figures for the different cities illustrate, the patterns of network interactions vary substantially. To summarize:

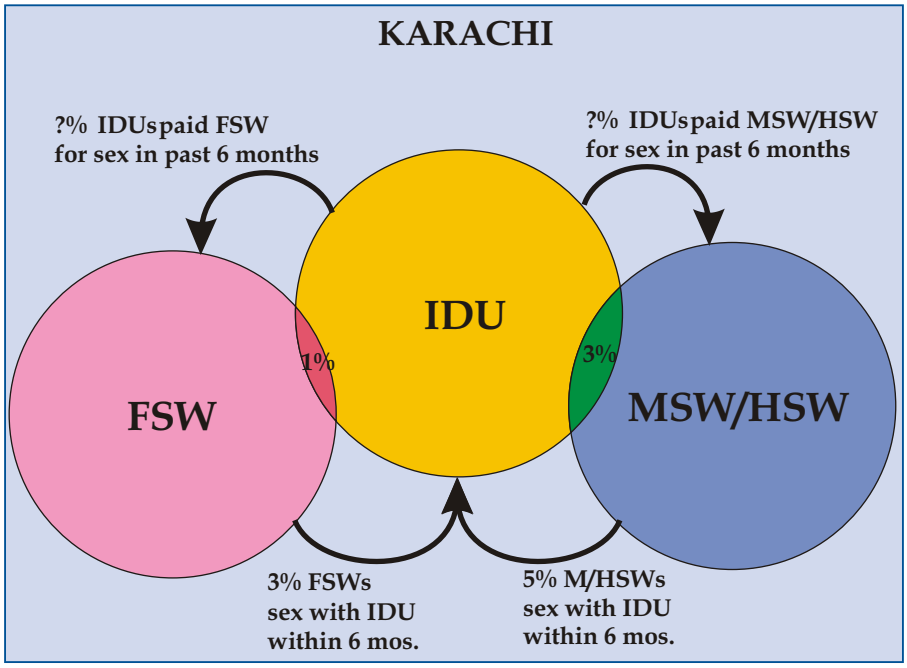
- ***Karachi*** Very little apparent overlap between FSWs and MSW/HSW and IDUs, though data on IDUs paying for sex were not available in this round.
- ***Lahore*** Although few sex workers report that they have injected drugs, there appears to be substantial overlap of sexual networks with a substantial proportion of IDUs reporting that they

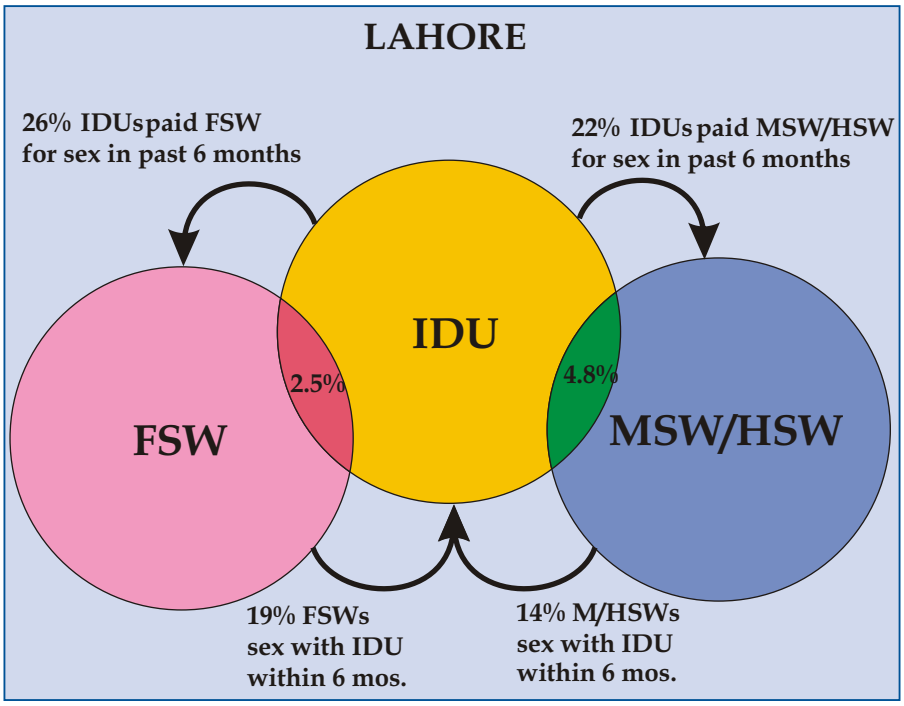
pay for sex with FSWs and MSW/HSW, and a high proportion of sex workers reporting that they have recently had sex with an IDU.

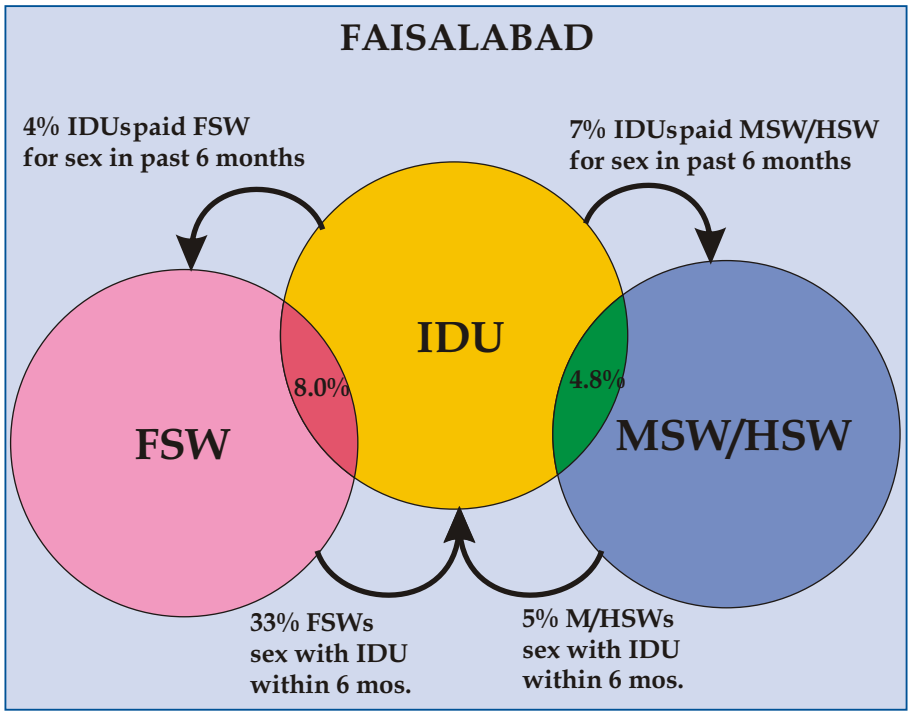
- ***Faisalabad*** Generally, modest overlap of these populations, with only 4% of IDUs reporting that they recently paid an FSW for sex and 7% reporting paid sex with a male or Hijra sex worker. However, a high proportion of FSWs report having sex with IDUs, suggesting that a relatively high proportion of FSWs have non-commercial sex partners who are IDUs.
- ***Multan*** A small proportion of sex workers report injecting drug use or sex with IDUs, but a relatively high proportion of IDUs report paying for sex with both FSWs and MSW/HSW.
- ***Hyderabad*** There is very little sexual networking between FSW and IDU sub-populations, but a relatively high proportion of MSW/HSW (10%) report injecting drugs and 14% of MSW/HSW report having sex with IDUs in the past six months.
- ***Sukkur*** Between 5% and 10% of FSWs and MSW/HSW report injecting drugs and/or having sex with an IDU, and a relatively high proportion of IDUs report having paid for sex with FSWs (13% of IDUs) or MSW/HSW (17%).
- ***Peshawar*** No FSWs and 5% of MSW/HSW report injection drug use. However, more than 20% of IDUs report paying FSWs and/or MSW/HSW for sex, and 17% of FSWs report having sex with an IDU in the past six months.
- ***Quetta*** A small proportion of sex workers report injection drug use, but approximately 15% of FSWs and MSW/HSW report having sex with IDUs. Approximately 19% of IDUs report paying for sex with FSWs, while only 8% report paying MSW/HSW for sex.

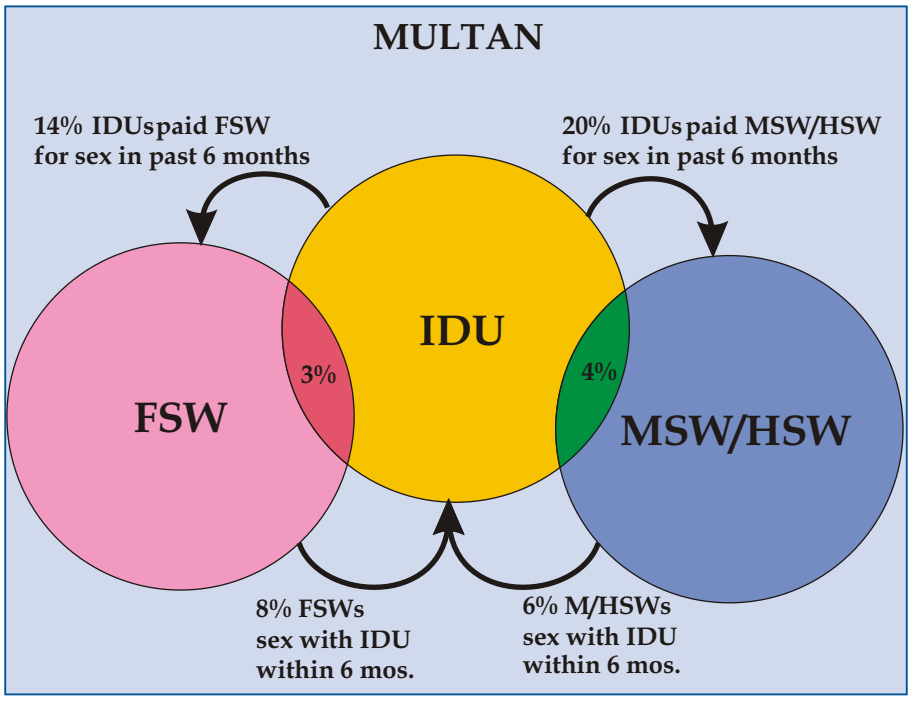
Figure D1.6 Interactions between IDU, FSW, MSW and HSW populations in cities of Pakistan, 2005

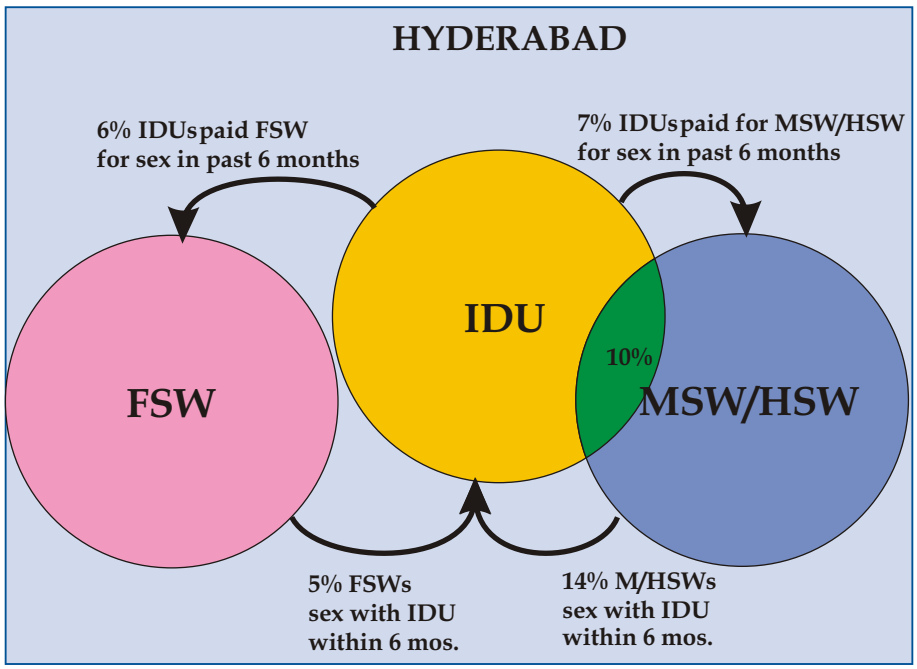


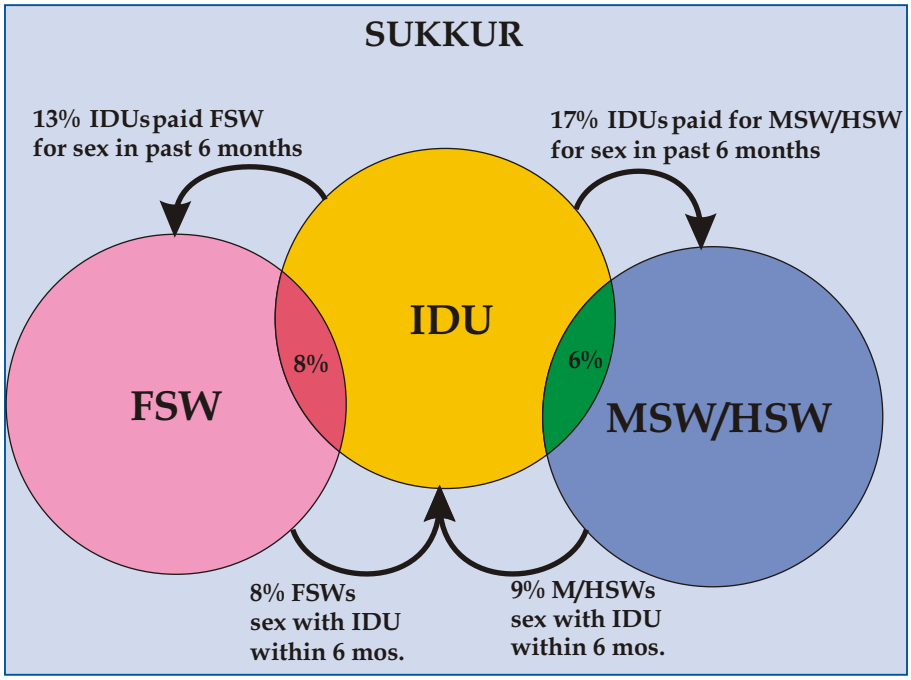

KARACHI
?% IDUspaid FSW
for sex in past 6 months
?% IDUspaid MSW/HSW
for sex in past 6 months
IDU
FSW
MSW/HSW
1%
3%
3% FSWs
sex with IDU
within 6 mos.
5% M/HSWs
sex with IDU
within 6 mos.

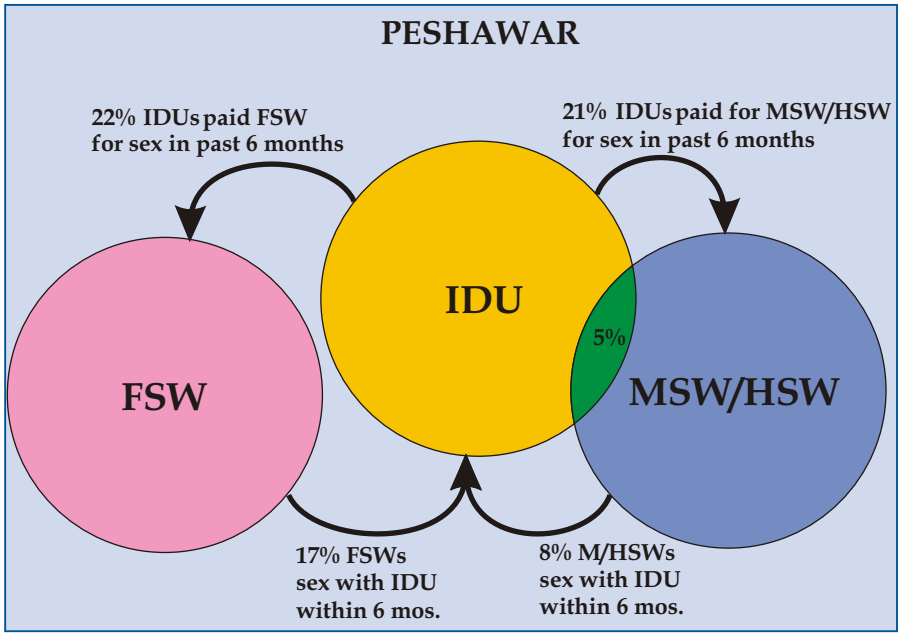

LAHORE
26% IDUspaid FSW
for sex in past 6 months
22% IDUs paid MSW/HSW
for sex in past 6 months
IDU
FSW
MSW/HSW
2.5%
4.8%
19% FSWs
sex with IDU
within 6 mos.
14% M/HSWs
sex with IDU
within 6 mos.

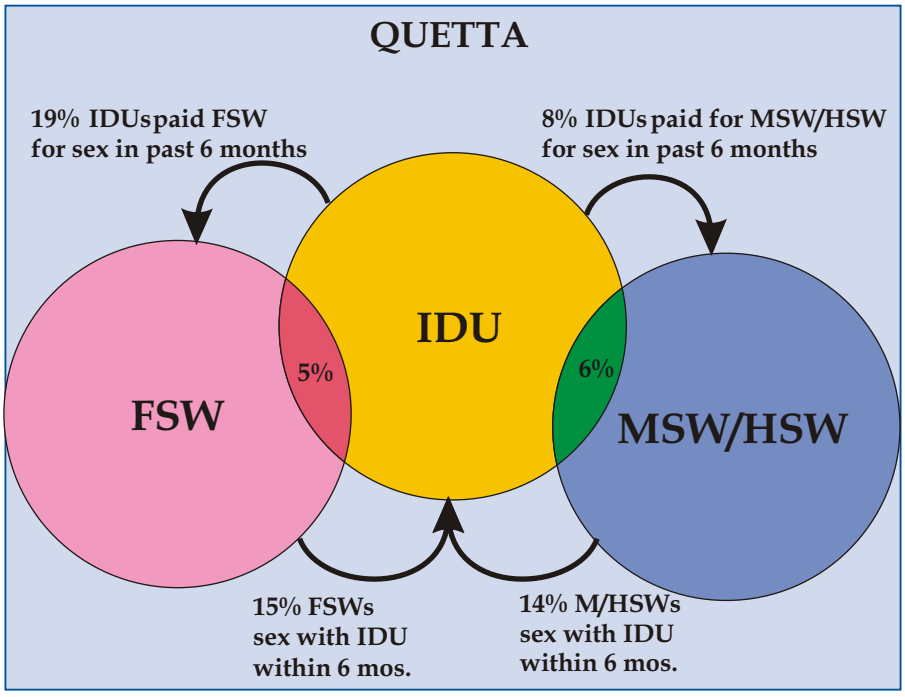

FAISALABAD
4% IDUspaid FSW
for sex in past 6 months
7% IDUspaid MSW/HSW
for sex in past 6 months
IDU
8.0%
4.8%
FSW
MSW/HSW
33% FSWs
sex with IDU
within 6 mos.
5% M/HSWs
sex with IDU
within 6 mos.


MULTAN
14% IDUspaid FSW
for sex in past 6 months
20% IDUs paid MSW/HSW
for sex in past 6 months
IDU
3%
4%
FSW
MSW/HSW
8% FSWs
sex with IDU
within 6 mos.
6% M/HSWs
sex with IDU
within 6 mos.


HYDERABAD
6% IDUs paid FSW for sex in past 6 months
7% IDUs paid for MSW/HSW for sex in past 6 months
FSW
IDU
10%
MSW/HSW
5% FSWs sex with IDU within 6 mos.
14% M/HSWs sex with IDU within 6 mos.


SUKKUR
13% IDUs paid FSW for sex in past 6 months
17% IDUs paid for MSW/HSW for sex in past 6 months
FSW
8%
IDU
6%
MSW/HSW
8% FSWs sex with IDU within 6 mos.
9% M/HSWs sex with IDU within 6 mos.





In summary, sexual networking between IDUs and female, male and Hijra sex worker sub-populations appears to be more common in some cities (e.g. Lahore, Peshawar, Quetta) than others (e.g. Faisalabad, Karachi, Hyderabad). Where the overlaps are substantial, it will be important to focus prevention programs on multiple key sub-populations and to ensure that sexual risk reduction is an important part of prevention programming for IDUs.

E. LIMITATIONS

As with any surveillance system, there are a number of limitations that should be considered when interpreting the findings. Since this report focuses on the first full round of data collection under the second generation surveillance system, there are a number of key limitations which are summarized below.

Mapping

The mapping methodology used in this survey is rapid, and relies substantially on collecting information from key informants. This approach is most comprehensive and accurate when there are strong prevention programs in place since that enriches the availability of well-informed key informants and community members. However, in this round there were few cities that had well-developed service delivery packages, and much of the mapping work therefore did not benefit as much as is optimal from the experience of local implementing organizations or community members. As a result, it is very likely that the mapping process missed important pockets of key sub-populations, particularly those that are more hidden such as home-based FSWs. These limitations should reduce in future rounds with the expansion of service delivery packages in these cities.

Behavioural and Biological Surveys

As with the mapping methodology, the lack of extensive service delivery packages is likely to have limited the representativeness of the samples selected and recruited for participation in the surveys. In particular, those key sub-populations that are somewhat hidden are likely to be under-represented.

Self-reported behaviour is known to be prone to biases based on social desirability. Specifically, those who have been exposed to education programs might be prone to reporting lower levels of risk behaviour (e.g. higher condom use) than those who have not been exposed to programs. Since the exposure to programs is highly variable, some differences in self-reported behaviours could be due to these potential biases.

In this survey participants were restricted by age, such that sex workers aged less than 15 and IDUs aged less than 18 were excluded. Since the data show that a substantial proportion of sex workers, especially MSWs and HSWs begin at an earlier stage, younger sex workers are under-represented in these analyses.

F. SUMMARY AND CONCLUSIONS

This report provides important data for policy makers and program planners at the national, provincial and local levels:

- There are substantial numbers of female, male and Hijra sex workers and injecting drug users in all of the eight cities surveyed. The large majority of these individuals have not been reached by prevention programs and services, and the prevalence of high risk behaviours is high. Where programs are reaching these key sub-populations, there is evidence that preventive behaviours are higher suggesting that prevention programs have been effective for those reached. Therefore, to prevent the rapid emergence of concentrated epidemics in these cities prevention programs need to be scaled up substantially and quickly.
- In most of the cities, sex work has the highest potential to contribute to HIV epidemic expansion due to the relative size of the sex worker populations and the high number of sexual partners which form a bridge population. In some cities (e.g. Lahore, Multan and Sukkur), female sex work networks appear to be the largest, whereas in other cities (e.g. Karachi and Hyderabad) male and Hijra sex work is as or more important at the population level. In most cities there is substantial overlap of sex work and IDU networks through sexual partnerships, so programming should focus on multiple groups and ensure that sexual risk reduction is an important strategy in HIV prevention programs with IDUs.
- There are substantial structural factors that need to be addressed to reduce the vulnerability of these populations. Female sex work remains largely secretive in many locations, and a large proportion of FSWs rely on pimps, madams or other operators for clientele. Therefore, innovative strategies are required to reach these FSWs and to institute structural interventions that reduce their vulnerability. Alcohol and drug use in the context of sex is reported commonly by FSWs, MSWs and HSWs, so programs should seek ways of mitigating the impact of substance use on the social circumstances and behaviours of sex workers.
- Much remains unknown about the influences, patterns and full range of sex work in Pakistan. Therefore, more detailed investigations are required to understand the limitations of the mapping and survey data and to give more specific guidance to program planners and implementers. Moreover, implementing organizations should have the resources, skills and tools to supplement these data with more specific local data about the size, distribution and characteristics of the key sub-populations that they serve.

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