# HIV RISK BEHAVIOR AND PRACTICES AMONG HEROIN ADDICTS IN LAHORE, PAKISTAN

Faran Emmanuel[1], Saeed Akhtar[1], Arrastus Attarad[2] and Cyril Kamran[3]

[1]Department of Community Health Sciences, Division of Epidemiology and Biostatistics, Aga Khan University, Karachi, Pakistan; [2] HIV Prevention Project, Savoir-faire, Lahore; [3]Drug Abuse Prevention Program, Caritas Pakistan, Lahore, Pakistan

**Abstract.** While the numbers of reported and estimated cases of HIV are still relatively low in Pakistan, behavioral patterns that could lead to an HIV epidemic are reported to exist among injection drug users. Therefore, this cross sectional study was conducted to estimate the prevalence of injection drug use and to assess the level of HIV knowledge and practices among male heroin addicts in Lahore, Pakistan. A total number of 660 male heroin addicts were recruited from 22 drug user sites in the city; data were collected using a pre-tested structured questionnaire. Analysis revealed a poor knowledge of the disease, its modes of transmission and ways to limit transmission with only 30% of the respondents considering them at risk for acquiring the disease. A prevalence of 23.3% of injection drug use was noted. HIV risk injection practices included: group injecting (83.2%), sharing syringes (58.7%), and re-using used syringes (78%). Various risky sexual practices included multiple partners (24%), homosexuality (10.8%), sexual contacts with commercial sex workers (CSW) (20.8%), and with transvestites (3.3%). Condom use was low (11-50%). Of the subjects, 5.5% reported trading sex for drugs or money. We recommend HIV/STD prevention programs encompassing health education and health promotion strategies based on harm reduction techniques be used for drug users.

## INTRODUCTION

There is little doubt today about the link between drug use and HIV infection, which threatens many parts of the world (UNAIDS, 2002). Several studies on injection drug users have identified, a multitude of factors, including group drug injecting, sharing needles and syringes, re-using used syringes without disinfection, sharing of injection related paraphernalia, associated with HIV transmission among IDUs (Crane, 1991; Inciardi and Page, 1991; Des Jarlais *et al*, 1992; 1995; Stimson, 1993; Battjes *et al*, 1994; Friedman *et al*, 1995; Normand *et al*, 1995; Rhodes *et al*, 1999). Various HIV risk sexual practices are prevalent among drug users, included unprotected sexual intercourse, multiple hetero and homo sexual partners, sexual contacts with CSW, the presence of other sexually transmitted diseases and trading sex for money or drugs (Vermund, 1995; Rhodes *et al*, 1996; Royce *et al*, 1997; Pamptey, 2002; Sanchez *et al*, 2002; Tyndall *et al*, 2002).

In the Eastern Mediterranean, while HIV prevalence continues to be low, increasing numbers of HIV infections are being detected in several countries, transmission is mainly through unsafe sex and injection drug use (EMRO-WHO, 2001). Surveillance data from Pakistan have shown that the numbers of reported and estimated cases of HIV are still relatively low, and the infection is still confined to pockets of high risk groups (World Bank, 2002). However, it is assumed that the low prevalence of HIV may be due to one or more of the following reasons: an actual low level of HIV infection; epidemic still being in its earliest stages; widespread under-reporting of cases due to inadequacies in the surveillance system. Pakistan is thus considered to be in a 'high risk-low prevalence' situation, where an explosion of the HIV epidemic can occur if urgent steps in primary prevention are not taken. Most recent estimates of the number of chronic heroin abusers approach 500,000 in Pakistan

Correspondence: Faran Emmanuel, Department of Community Health Sciences, Division of Epidemiology and Biostatistics, Aga Khan University, Karachi 74800, Pakistan.
Tel: 91-21-4931430; Fax: 92-21-4934294
E-mail: faran.emmanuel@aku.edu

(UNODC, 2000) with evidence that drug preferences have rapidly shifted from 'chasing the dragon' or smoking to injection drug use. Thus, while a nationwide survey conducted in 1993 reported that less than 2% of injection drug users were infected (PNCB, 1994), recent figures estimate a prevalence of 15%, suggesting an increasing trend (UNODC, 2000). Past experience has shown in many parts of the world, including New York (Des Jarlais *et al*, 1989), Bangkok (Choopanya *et al*, 1991), and Manipur (Sarkar *et al*, 1993) drug use helped kick-start the epidemic. Introduction into the drug users community lead to a massive explosion of the epidemic. Thus, transmission of HIV among and from IDUs represents the most threatening conduit for spread of HIV to the non-injecting, heterosexually active populations.

Recent studies of injection drug users have shown that the infection has yet to penetrate this high risk group, but a variety of high risk behavior and practices have been reported which can fuel the epidemic to massive proportions (Altaf, 2002, unpublished data; UNDCP and UNAIDS 1999; Zafar *et al*, 2003). However, the studies have only focused on IV drug users, and have gathered data from a couple of field sites for street drug users, neglecting the major chunk of non injectors who are at risk for HIV infection and transmission (Booth *et al*, 2002). Due to study design, previous studies have not commented on the prevalence of injection drug use. Due to the sampling techniques used, the results cannot be generalized to the overall population of drug users. This cross-sectional study was, therefore, conducted with the following objectives: to estimate the level of knowledge regarding HIV/AIDS, estimate the prevalence of injection drug use and determine the HIV risk behaviors and practices among male heroin addicts in Lahore, Pakistan.

## MATERIALS & METHODS

### Study design and setting

This study was conducted in Lahore, the provincial capital and second largest city in Pakistan, which has been most affected by drug use. The stronger networks of drug peddlers, occur in the commercial sex worker zones, where there is the easy availability of injection and other drugs making this population extremely vulnerable to the risk for acquiring HIV infection.

### Sampling method

The data were collected from January to June 2002 in collaboration with a locally functioning NGO working in drug abuse prevention and HIV/AIDS. Extensive efforts were made to achieve a representative sampling of drug addicts. A complete mapping of drug users areas was done, utilizing multiple resources, such as Anti-Narcotic Force (ANF), local non-governmental organizations working against drug abuse, and the addicts themselves, before selecting the study subjects. A total number of 22 such sites of 'high drug activity', drug trafficking, peddling and/or harboring drug users, were identified, from which the study subjects were recruited.

### Recruitment of study subjects and data collection

To be considered eligible for the study, all participants were required to be males, dependent on heroin, as defined by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, 2000), and have a willingness to participate in the study. Other subjects were excluded from the study if they had any psychiatric co-morbidities. An equal number of heroin addicts was randomly selected for data collection from the 21 identified sites of 'high drug activity', followed by an informed consent and a structured interview by a trained interviewer using a pre-tested questionnaire. All interviewers had an experience of at least five years working with heroin addicts in the community, and were trained in data collection. The three day training included issues on subject selection, explaining the rationale and objectives of the study to the subjects, acquiring informed consent and a thorough understanding regarding each question.

### Sample size

Sample size was calculated using a confidence level of 95% and bound to an error estimation of 4%. An expected prevalence of 50% injection drug use was used to attain a sample size of 600 drug addicts which was further inflated by

10% for data entry errors, missing values etc. Thus a total number of 660 addicts were needed for the study.

**Study variables**

Data were collected on various demographic and socioeconomic variables, awareness of the disease, routes of transmission and methods to avoid transmission. Information on the drug use practices, routes of administration, injection drug use, sharing of syringes, sharing of injection equipment and paraphernalia, etc, during the past 1 year were recorded. Data were also collected regarding sexual behaviors and practices, the number of sexual encounters and sexual partners, history of homosexual intercourse, condom use, etc, during the past 1 year. A history of blood transfusion was also recorded.

**Data management and analysis**

After collection and editing, the data were double entered into the computer using EPI INFO 6.04, followed by data cleaning. Data analysis was done using the statistical software package, SPSS version 10.0 (statistical package for social sciences).

**Ethical issues**

To assure adherence to the ethical standards of epidemiological research, procedures followed included: securing informed consent, maintaining privacy and confidentiality of personal information, inaccessibility of the information about the subject, except by the principal investigator, non-inclusion of subject's identifying information in the computer files, and presentation of all the results in an aggregate form, without individual identification.

## RESULTS

Of 703 eligible heroin addicts contacted, 31 (4.4%) refused to participate in the study. Eight respondents had incomplete data for several variables and were, therefore, excluded from analysis. The final data analysis used the records of 664 heroin addicts.

**Socio-demographic characteristics**

Table 1 shows the demographic characteristics of the study subjects. The average age of the

Table 1
Demographic and socio-economic characteristics of all drug addicts.

| Variable | N (664) | % |
|---|---|---|
| Age[a] (year) | | |
| Upto 20 | 86 | 13 |
| 21-25 | 114 | 17.2 |
| 26-30 | 163 | 24.5 |
| 31-35 | 141 | 21.2 |
| 36-40 | 106 | 16 |
| >40 | 54 | 8.1 |
| Years of formal education | | |
| None | 447 | 67.4 |
| Upto 5 years | 99 | 14.9 |
| 6-10 yrs | 102 | 15.4 |
| >10 yrs | 16 | 2.4 |
| Average monthly income[b] | | |
| Upto Rs 1,500 | 35 | 10.8 |
| Rs 1,501 - Rs 3,000 | 148 | 45.7 |
| Rs 3,000 - Rs 5,000 | 107 | 33 |
| >Rs 5,000 | 34 | 10.5 |
| Religion | | |
| Muslim | 626 | 94.3 |
| Non-Muslim | 38 | 5.7 |
| Language spoken at home | | |
| Punjabi | 566 | 85.2 |
| Urdu | 72 | 10.8 |
| Others | 26 | 4.0 |
| Migration status | | |
| Born and raised in Lahore | 489 | 73.6 |
| Migrated to Lahore | 165 | 26.4 |
| Marital status | | |
| Currently married | 366 | 55.1 |
| Divorced/separated | 61 | 9.1 |
| Widowed | 14 | 2.1 |
| Unmarried | 223 | 33.6 |
| Current employment status[c] | | |
| Unemployed | 331 | 51.2 |
| Salaried employee | 77 | 11.6 |
| Self employed | 133 | 20 |
| Daily wages | 114 | 17.2 |
| Current residence | | |
| Family home | 390 | 58.7 |
| Relatives | 89 | 13.4 |
| Friends | 46 | 6.9 |
| Workplace | 22 | 3.3 |
| No specific place | 60 | 9 |
| Streets | 57 | 8.6 |
| History of arrest | | |
| Yes | 41 | 6.2 |
| No | 623 | 93.8 |

[a]Mean±SD : 30.19±76; [b]n=324; [c]n=655

participants was 30.19 ± 7.6 years, with 46% of the addicts between 26 and 35 years of age. More than one third of the subjects had no formal schooling (447), were predominantly Muslims (626), belonged to Punjabi ethnicity (566) and were born and raised in Lahore (489). Of the respondents, 56.5% had an average monthly income up to Rs 3,000 per month; a high level of unemployment was reported (51.2%). Of the respondents, 55% were currently married, 33.6% were unmarried, while the remaining 11% were separated, divorced or widowed. Only 58.7% of the study subjects were living with their families in their homes.

**Knowledge of HIV/AIDS**

Six hundred fourty-four (97%) of 664 respondents had heard about HIV/AIDS; 54% of the respondents knew that HIV/AIDS exists in Pakistan. The distribution of the variables used to measure knowledge regarding HIV/AIDS is provided in Table 2. Friends were the prime source of knowledge (45.8%), followed by Radio/TV (27.5%), from various NGO's and people working for the control and prevention of HIV/AIDS (14%) and other forms of print media (9.8%), such as posters, newspaper etc, 64.4% of the respondents knew that HIV is transmitted through injections and needles, while 52% were aware of the fact that sexual intercourse can transmit HIV. Vertical transmission of the disease was known to a very small fraction (5.6%) and less than 5% of the addicts knew that HIV can be transmitted through blood transfusion. Results also show that realization of the personal risk of getting infected with HIV was low (30%), and only 18% thought that they needed to be tested for HIV.

Table 2
Knowledge regarding HIV/AIDS among drug addicts in Lahore, Pakistan.

| Question | n (%) |
|---|---|
| Ever heard of HIV / AIDS | 644 (97) |
| Information source | |
| Friends | 295 (45.8) |
| TV/radio | 177 (27.5) |
| People working against HIV/AIDS | 88 (13.7) |
| Posters/newspaper/magazine | 63 (9.8) |
| Others | 21 (3.3) |
| HIV/AIDS exists in Pakistan | 348 (54%) |
| A healthy looking person can carry HIV/AIDS | 288 (44.7) |
| Routes of HIV spread | |
| Injections/needles | 415 (64.4) |
| Sexual intercourse | 333 (51.7) |
| Eating/physical contact with AIDS patient | 158 (24.5) |
| Mother to child | 36 (5.6) |
| Exchange of blood | 29 (4.5) |
| Others | 82 (12.7) |
| Don't know | 80 (12.4) |
| Methods of protecting HIV spread | |
| Using sterile needles | 144 (22.4) |
| Avoid injection drug use | 191 (29.7) |
| Condom use | 162 (25.2) |
| Having a single sexual partner | 160 (24.8) |
| Not associating with AIDS patients | 122 (18.9) |
| Avoid sex with sex workers | 112 (17.4) |
| Avoid blood transfusion | 46 (7.1) |
| Others | 55 (8.3) |
| Don't know | 88 (13.7) |
| Ever discussed HIV/AIDS with anyone | |
| Never discussed | 440 (66.3) |
| Other addicts | 89 (13.4) |
| Non addict friends | 28 (4.2) |
| People working against HIV/AIDS | 63 (9.5) |
| Others | 27 (4.1) |
| I am at a risk of getting HIV/AIDS | 195 (30.3) |
| I think I need to be tested for HIV/AIDS | 116 (18) |
| I know where can I get tested for HIV | 43 (6.7) |

**Drug injecting practices**

Our study found an overall prevalence of injection drugs users of 23.3% (95% CI: 20.1-26.5%) almost two thirds (64.5%) of which had been infecting drugs for the past 2 to 4 years, 83.2% of which reported that they had been injecting in groups (Table 3). Fifty-eight percent of those interviewed reported that their last injection episode was in a group; 58.7% reported sharing their injection equipment with other IDU's. An old syringe was reported to be used by 78% of the injectors, and only half of them attempted to clean it before re-using it. The various methods attempted for cleaning the syringe were washing with plain water (54%), boiling in water (14%), using a disinfectant *eg*, dettol (17%), spirit (10%) or bleach (5%). Among 155 drug users, 57 (37%) utilized the help of other IDU's for injecting drugs, 20% of the time the service was paid

Table 3
Injection drug use among drug addicts in Lahore, Pakistan.

| Question | n (%) |
|---|---|
| Prevalence of injection drug use | 155 (23.3)[a] |
| Years since injecting drugs | |
| ≤1 yr | 44 (28.4) |
| 2-4 yrs | 100 (64.5) |
| ≥5 years | 11 (7.1) |
| Number of injections per day | |
| Once | 22 (14.2) |
| 2-3 times | 104 (67.1) |
| 4 and above | 29 (18.7) |
| Ever injected drug in a group | 129 (83.2) |
| Last episode of injection drug use was in a group | 90 (58.1) |
| Injection equipment sharing | 91 (58.7) |
| Use of a used syringe on last injection episode | 121 (78.1) |
| Cleaning of used syringe on last injection episode | 59 (48.8) |
| Methods used for cleaning used syringe | |
| Wash with plain water | 32 (54.2) |
| Wash with dettol | 10 (16.9) |
| Boil in water | 8 (13.6) |
| Spirit | 6 (10.2) |
| Bleach | 3 (5.1) |
| Help taken by other drug users for injecting drugs | 57 (37) |
| Help taken by other drug users was paid for | 11 (19.3) |
| Source of needles for injecting drugs | |
| Friends | 61 (39.6) |
| Pharmacy | 47 (30.5) |
| Hospital | 21 (13.6) |
| Needle exchange program | 18 (11.7) |
| Others | 7 (4.5) |

[a]95% CI : 20.1 to 26.5

Table 4
Sexual risk behaviors among drug addicts in Lahore, Pakistan.

| Question | n (%) |
|---|---|
| Ever had sexual intercourse | 599 (90.2)[a] |
| **Regular sex encounters** | |
| Having a regular sex partner other than wife | 67 (11.2) |
| Never used a condom with regular sexual partner | 54 (80.6) |
| **Casual sex encounters** | |
| Number of female casual sex partners | |
| One | 126 (21.0) |
| 2 - 3 | 135 (22.5) |
| 4 and above | 8 (1.3) |
| Use of condom in heterosexual encounters | 105 (39.5) |
| Number of male casual sex partners | |
| One | 57 (9.5) |
| More than one | 15 (2.5) |
| Commercial sex workers (paid money) | |
| Female sex worker | 122 (20.4) |
| Male/transvestite | 20 (3.3) |
| Use of condom in encounters with sex workers[b] | 60 (49.5)<br>139 (20.9) |
| Reason for condom use | |
| Avoid pregnancy | 86 (61.9) |
| Avoid STD's including HIV | 25 (18) |
| Partner's wish | 20 (14.4) |
| Others | 8 (5.8) |
| Reason for not using condoms | |
| Non-availability | 66 (40) |
| Cannot afford financially | 46 (27.9) |
| Did not know the importance | 29 (17.6) |
| Others | 14 (8.5) |
| Not required | 10 (6.1) |
| Exchanged sex for drugs or money | 33 (5.5) |

[a]95% CI : 87.7-92.3; [b]95% CI : 17.9-24.2

for. Friends (40%) remained the top source of acquiring needles and syringes, followed by local pharmacies (30%), and hospitals (13.6%). Only 12% of needles used were reported to be from needle exchange programs in the city. Our results show that 12.2% (80) of the respondents had sold their blood to government hospitals for needy patients.

**Sexual behaviors and practices**

Eleven percent of the respondents reported having a regular ongoing extra-marital sexual relationship. More than 40% of the subjects reported involvement in casual heterosexual activity during the past year with single (21%) or multiple sexual partners (23.8%), while 12% of the subjects reported practicing homosexuality with one or more partners in the past year. Of the subjects, 20.4% had sexual relations with female CSW in the past year, while 3.3% reported having sex with a transvestite. Of the respondents, 80.6% did not use a condom in their last sexual encounter with a regular sex partner. Nearly 40%

of the respondents reported use of a condom during their last casual heterosexual encounter, while a condom was never reported to be used in homosexual encounters. Fifty percent of the respondents used condoms in a sexual encounter with a female commercial sex worker, while a condom was used by only 2 (3%) of the respondents who had a sexual encounter with males or transvestites. Among those using condoms, the major reason reported for condom use was to avoid pregnancy, while only 18% of condom use was to avoid STD's or HIV/AIDS. The main reason cited for not using condoms was non-availability (40%) and non-affordability (27.8%), while a high proportion (17.6%) reported they did not know the importance of condoms. Of the subjects, 5.5% reported trading sex for drugs or money (Table 4).

## DISCUSSION

Our study has highlighted an array of factors and patterns of behavior, which clearly indicate a threatening potential for a major HIV epidemic in the future. Although the overall knowledge regarding HIV/AIDS, its modes of transmission and ways to limit transmission, was found to be inadequate, most alarming was the lack of realization among drug users, of the personal risk attached to the use of drugs themselves.

Our study revealed an intravenous drug use prevalence of 23.3% (95% CI: 20.1% - 26.5%), which is slightly higher than the 15% overall prevalence quoted by previous research (UNODC, 2000). This can be explained by the difference in the design and sampling methodologies, geographical variations, as well as the difference in the way IDU was defined. Our results confirm the fact that injection drug use is a recent phenomenon in Pakistan; and the practice has spread widely over the past 5 years. Multiple practices, which are known to put IDUs at high risk for acquiring infection were found to be prevalent among IDU's, such as injecting drugs in groups, where direct and indirect sharing of needles is common. Direct sharing involves injecting drugs with a syringe previously used by an addict, while indirect sharing includes sharing of the injecting related paraphernalia, cotton swabs, filters, water, etc (Crane, 1991). Sharing syringes and needles has been identified as one of the strongest risk factors for HIV transmission among drug users since intra-venous injection of drugs, virtually guarantees contact between the injection equipment and injector's blood (McCoy and Inciardi, 1995). Although bleach is recommended to disinfect syringes of HIV, results show that our respondents do not significantly use it as a disinfectant, and do not properly disinfect their injecting equipment. Studies have reported that even where bleach has been used for cleaning syringes, a lack of awareness of the correct technique and complexity of the procedure does not ensure proper disinfection of the syringe (McCoy *et al*, 1994). Our respondents also reported using paid injectors, which has been documented in previous research to occur in Pakistan, India, Bangladesh, Nepal, Vietnam, Myanmar, and Malaysia (Ried and Constigan, 2002). The equipment used for injecting is used repeatedly by multiple subjects without proper sterilization and thus can play a pivotal role in transmitting HIV infection. Past experience has taught us, local conditions of needle availability may influence the prevalence of risk behavior, but it does not eliminate sharing, since the reasons for its continuance are frequently embedded in the social meanings and interactions of IDUs' and their sharing partners (Hughes, 2000). In these circumstances, shared injecting equipment may not be viewed as anything 'risky', as has been 'epidemiologically' defined (Barnard, 1993).

Regarding the existing knowledge of sexual transmission of the disease, an alarming situation was noted. Although half of the respondents knew that sexual intercourse is a route of disease transmission, specific knowledge of disease transmission and its protection were not clear. Our results are in accordance with available literature, which documents high level of sexual activity both with regular sexual partners (other than a wife) and casual sexual partners both males and females. A fairly high proportion of respondents reported having had a sexual intercourse with female sex workers as well as transvestites during the past one year. This finding is supported by extensive research data, which confirms that drug addicts are known to have regular sexual contacts with commercial sex workers (Vermund, 1995;

Rhodes *et al*, 1996; Royce *et al*, 1997; Edlin *et al*, 1999). We have also noticed drug addicts experiencing homosexual relationships, both being the dominant and the receptive partner, although the numbers reported are feared to be an under representation of the actual picture due to the extreme social and moral stigma attached to this information. Research conducted in the past among drug addicts, mentions the involvement of drug addicts in having sex with men, (Paul *et al*, 1993; Purcell *et al*, 2001) as well as exchanging sex for drugs or money (Windle, 1997; Baseman *et al*, 1999), factors which play a key role in the spread of HIV among the general population. While more than half of the drug users reported casual sexual encounters during the past year, low rates of condom use were reported, a finding consistent with international data (Vermund, 1995; Sharma *et al*, 2002; Tyndall *et al*, 2002). It is interesting to note that condom use is more consistent in 'casual sexual relationships' including with sex workers, rather than among 'regular sexual relationships', which has been noted earlier as well (Friedman *et al*, 1994). A significant proportion of respondents used condoms to avoid pregnancy rather than to protect themselves from various STDs and HIV/AIDS. An alarming fact is that while homosexual encounters were reported, condom use in such encounters was insignificant in comparison to heterosexual encounters. This supports the fact that condom use was primarily to avoid pregnancy rather than to protect from STD's and HIV. This high risk sexual behavior among drug users needs urgent addressing, since it forms one of the prime routes of spread of HIV from the drug user community into the general population.

An evaluation of the current situation shows that Pakistan is at a dangerous intersection. HIV has always shown to strong foothold once it penetrates drug-user communities, and the potential for continued spread through drugs and sex is undeniable. Our past experiences with the epidemic have shown that the two major factors leading to rapid transmission include a lack of awareness of an HIV threat among drug users combined with the presence of mechanisms of efficient transmission, such as group injecting and sharing of injection paraphernalia (Des Jarlais *et al*, 1992). We have seen that irrespective of their drug route preferences and injecting practices, all drug users engage in high risk sexual practices. This warrants the implementation of HIV risk reducing campaigns and programs for all addicts, not merely IDUs. Although heterosexual transmission of HIV is found to be the most common mode of HIV transmission in poor countries, (Pamptey, 2002) including in Pakistan (UNAIDS, 2002), less attention has been paid to reducing the sexual risk factors for HIV transmission among drug users. Thus, while drug users may refrain from sharing needles and syringes amongst themselves, they may continue to have unprotected sexual encounters and overlook the risk of the sexual transmission of HIV (Rhodes *et al*, 1996).

We are still fortunate in that HIV has not yet infiltrated the drug using population. With comprehensive and precise interventions now, it is possible to reduce the rate of infection. It is imperative for us to learn from lessons elsewhere and devise strategies based on a practical approach. Based on our results we recommend the development of a comprehensive package of services for the drug user community. The 'risk culture' and 'social networks' of drug users, especially IDU's, needs to be further investigated through a combination of qualitative and epidemiological research, to have a thorough understanding of the various social and structural factors which are a part of the drug abuse culture. The situation also warrants development of an active surveillance system for data collection and HIV infection prevalence monitoring on a regular basis, as a measure to control the epidemic early in its development. An equally important target is reducing the number of injection drug users. This urgently requires addressing the problem of increasing injection drug use in the country, identifying and alleviating the factors associated with this phenomenon, and developing strategies to cope with the future. The main approach needs to be supplemented with specific programs directed at controlling and preventing HIV transmission among drug users through various measures, including information delivery and the raising of awareness among the drug user community, provision of sterile injecting equipment and condoms for restricting HIV transmission in Pakistan.

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