

Size Estimation of Injecting Drug Use in Punjab & Haryana



January 2008

**Atul Ambekar
B. M. Tripathi**



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Foreword

Injecting drug use (IDU) contributes significantly to the spread of the HIV epidemic in India. The sharing of injection equipment among drug users represents one of the highest risks of HIV transmission and prevalence is higher among IDU than other groups. In India it was found to be above 10 per cent of drug users tested in sentinel sites in 2006.

Until recently, it was often believed that injecting drug use was mostly confined to north-eastern states and large cities of the country. However, a growing number of reports from educators, social workers and civil society organizations mentioned that this practice was spreading, notably in states of the North of India.

A countrywide survey conducted in 2006 by SPYM in 300 sites showed that injecting drug use could be found in several sites of Punjab, Chandigarh and Haryana. This finding led UNAIDS to ask SPYM to conduct a rigorous study in specific districts of three states of Punjab and Haryana and the Union Territory of Chandigarh. The methodology and technical support was provided by the National Drug Dependence Treatment Centre of AIIMS.

Using an advanced, respondent-driven survey method, the study was to provide an estimate of the size of the IDU population in the two states and the Union Territory. This is important information for the Government, as the design and budgets for prevention and “harm reduction” interventions supported by the State AIDS Control Societies are based on these numbers. At present, two “targeted interventions” for IDU are in place in Chandigarh, one in Punjab and none in Haryana yet.

The findings of the study show that a sizeable number of IDU requires interventions in the surveyed regions. Injecting drug use cuts across age groups and is mostly pronounced among the unemployed and unskilled sections of society. Easy access to opiate prescription pharmaceuticals seems to play a large role in fueling IDU addiction.

This study is the first of its kind in India and its results should be helpful for the National AIDS Control Organizations and the State AIDS Control Societies to strengthen the prevention of HIV transmission through drug use and avail care and support services for the concerned communities.

UNAIDS wishes to commend the high quality of the survey and research work by SPYM and AIIMS. We hope that more studies of this type will be undertaken to better understand the evolving issue of injecting drug use in India and develop strategies to prevent related HIV transmission.

Dr. Denis Broun
UNAIDS Country Coordinator
India

Acknowledgements

A study of this kind is result of dedication and hard work of many individuals and organisations. First and foremost, we would like to acknowledge the Society for Promotion of Youth and Masses (SPYM), for providing us this opportunity to collaborate in this venture. We wish to express our deep appreciation for the vision, commitment and leadership of SPYM in organising the support of all the NGO partners and looking after all the logistic and administrative aspects of the study in such an inclusive and transparent manner.

We also wish to acknowledge the support and inputs of all our implementing NGO partners in Punjab, Chandigarh and Haryana who undertook the mission of completing the data collection for this survey on a war footing. It was their hard work, determination and dedication, which resulted in timely completion of this survey.

We are grateful to UNAIDS (India) for convening the partners institutions and facilitating the technical discussions in the formative stages of the study. We also thank UNAIDS for providing the funding and necessary support for this survey.

Many experts from various disciplines and quarters have helped us in refining our methodology and providing valuable feedback on this report. For this we wish to express our heartfelt thanks to National AIDS Control Organisation, State AIDS Control Societies of Punjab, Haryana and Chandigarh, National Institute of Social Defence, Ministry of Social Justice and Empowerment, United Nations Office on Drugs and Crime, Dr. S. Suresh Kumar (Chennai) and Professor Rajat Ray (New Delhi).

We must also express our heartfelt thanks to the team of experts from Family Health International (India). The team led by Dr Tobi Saidel and comprised of Dr R. Adhikary, Mr. N. Roy, and Mr. P. Goswami has helped and guided us at every step. Without their contributions, the report would not have acquired its present shape.

Last, but not least, we acknowledge the contribution made by all the respondents in this study, who helped us know more about them.

Atul Ambekar

B. M. Tripathi

National Drug Dependence Treatment Centre

AIIMS, New Delhi

Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
AIIMS	All India Institute of Medical Sciences
DAMS	Drug Abuse Monitoring System
DFID	Department for International Development
FHI	Family Health International
HIV	Human Immunodeficiency Virus
IDU	Injecting drug use / Injecting Drug User
IDUs	Injecting Drug Users
KAP	Knowledge Attitude and Practices
MSJE	Ministry of Social Justice and Empowerment
MSM	Men who have Sex with Men
NACO	National AIDS Control Organization
NISD	National Institute of Social Defense
NDDTC	National Drug Dependence Treatment Centre
NGO	Non Governmental Organization
PE	Peer Educator
PLI	Peer Led Intervention
RDS	Respondent Driven Sampling
RDSAT	Respondent Driven Sampling Analysis Tool
SPYM	Society for Promotion of Youth & Masses
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNODC	United Nations Office on Drugs and Crime
UT	Union Territory
VCTC	Voluntary Counseling and Testing Centre

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Executive Summary

One of the major factors behind the spread of HIV in the country is Injecting Drug Use (IDU). Though it has been widely known that injecting drug use is prevalent in many parts of the country, detailed information about its extent and pattern remains inadequate. While certain north eastern states (i.e. Manipur and Nagaland) and metropolitan cities (i.e. Chennai, Delhi and Mumbai) have been known to have a sizable IDU population for a long time now, there are recent indications that IDUs may be present in other parts of the country as well. Methodological difficulties involved in dealing with a hidden population like IDUs are the major factors behind the inadequate knowledge-base about extent of the problem.

Study Design and Methods

In order to surmount some of these methodological difficulties, the present study used a novel methodology to estimate the size of the IDU population in Punjab, Haryana and Chandigarh - *respondent driven sampling (RDS)* for reaching out to IDUs and *multiplier technique* - to estimate the number of IDUs in the surveyed districts. The study was conducted at five sites (comprised of total seven districts) in Punjab (Gurdaspur, Faridkot-Moga, Ludhiana, Patiala and Ropar [including Mohali]), five sites (comprised of total seven districts) in Haryana (Ambala, Jind, Kurukshetra-Kaithal, Narnaul-Rewari and Sonapat-Kharkoda) and Chandigarh (including Panchkula). Attempt was also made to project the estimates of IDU population in these districts to entire Punjab and Haryana.

In the first stage, IDUs were recruited using respondent driven sampling (RDS). Each recruited respondent (i.e. male, aged 18 years or more, having injected at least once in the preceding six months) was interviewed by trained interviewers, and was asked to refer three more respondents. Thus, through a chain sampling method the desired sample size was reached within four to five weeks. The data collected from the respondents was analysed using a specific software 'respondent driven sampling analysis tool' (RDSAT). Additionally data was collected through questionnaires mailed to various NGO-ran treatment centres in the state. All the participating NGOs were asked about the number of IDUs receiving in-patient treatment from them in the preceding six months.

In the next stage, using a multiplier technique, estimate of the size of the IDU population in the district was arrived at. The specific multiplier used for the purpose was "proportion of IDUs reporting that they have been admitted to the NGO treatment centre in the preceding six months." Multiplying the inverse of this proportion with the number of IDUs admitted in six months provided the size of the IDU population in the district. This estimate was used to determine the prevalence of injecting drug use among the general male population in the district. Finally, the prevalence of injecting drug use in the districts was used to project the number of IDUs in the entire states. At every step, the implementation of the study was monitored by the trained staff. All the steps in the data collection and analysis took about three months.

Key Findings

The findings revealed that majority of the IDUs in most sites belonged to the age group of 18 to 30 years and were employed. A large proportion had started injecting only recently (i.e. three to seven years) and usually injected pharmaceutical preparations like buprenorphine, pentazocine and a variety of sedatives (diazepam, promethazine, pheniramine etc.). Most

(ranging from 50% to 90%) were frequent injectors, i.e. used to inject either 'daily, multiple times' or 'about 3-4 times per week'. A large number – ranging from 34% to as high as 94% - reported having shared their injecting equipments 'ever'.

It was alarming to note that very few respondents had received any kind of treatment. No one reported having received oral substitution treatment ever. A small minority reported receiving needle syringe exchange services at two of the sites, Chandigarh-Panchkula and Gurdaspur. Similarly a very low proportion (ranging from 0.1% to 8%) reported having received in-patient treatment in the nearest NGO centre in the past six months.

Calculation of the estimated size of the IDU population in the surveyed districts revealed these figures: Ambala - 229, Chandigarh-Panchkula - 778, Faridkot-Moga -900, Gurdaspur - 825, Jind - 175, Kaithal-Kurukshetra - 1125, Ludhiana -300, Patiala - 1100, Rewari-Narnaul - 300, Ropar-Mohali - 917, Sonapat-Kharkhoda – 300.

Estimated number of IDUs		
State / UT	Lower limit	Upper Limit
Punjab	2600	18148
Chandigarh – Panchkula – Mohali	762	1170
Haryana	2265	15858

After calculating the IDU prevalence among the male population in these districts (based on the 2001 census data) and projecting the lowest and highest prevalence to the entire male population of the state, the figures for lower and upper limits of the estimates of the size of the IDU population in Punjab, Haryana and Chandigarh were arrived at (as shown in the adjoining table). However, the projection of the figures derived from the surveyed districts to the entire states must be interpreted with caution. The IDU situation in the non-surveyed districts may be different from the surveyed districts.

Conclusion

These methodological limitations notwithstanding, the findings of the study should be seen as an 'eye opener'. Till recently Punjab and Haryana did not figure prominently on the IDU map of the country. In the light of the recent sentinel surveillance finding that HIV infection among IDUs in this part of the country is alarmingly high (more than 13% in Punjab and more than 13% in Chandigarh, as per the 2006 data from the NACO), there is an urgent need to scale up the HIV prevention efforts among injecting drug users. Most of the IDUs remain out of the 'intervention-net' and hence the intervention programmes should be implemented with a wider scope to improve access for the beneficiaries. Additionally since many IDUs are sexually active and married, the prevention programmes should reach out to the sexual partners of IDUs as well.

Finally, this study has shown that it is feasible to conduct a methodologically robust size estimation study using minimum of resources and time. Such initiatives are required in other parts of the country as well, where they can provide a better understanding of the scale and extent of the problem of injecting drug use.

Injecting Drug Use in India

The drug use situation in India is characterised by heterogeneity. There are pockets of high and low drug use in the country. While traditionally, use of alcoholic beverages and plant based products extracted from cannabis and opium (poppy) was prevalent, in the last few decades, the use of more sophisticated drugs is clearly visible. Indeed, there is evidence that many users of traditional, plant-based drugs such as opium may be shifting to synthetic drugs such as heroin (usually smoked or 'chased' in India), buprenorphine (usually injected). In the country, about 0.7 per cent of adult males have been estimated to be 'current' (defined as those who have used it within the past one month) users of opioid drugs, among who about 0.2 per cent are current heroin users. It has been estimated that there are about 500,000 opioid dependent males in the country (UNODC and MSJE 2004a).

A more worrying trend however is the shift towards injecting the drug. Since the 1990s many opioid users (heroin 'chasers') have switched to taking drugs through the injecting route (UNODC and MSJE 2002, UNODC and MSJE 2004b). This shift can be observed not only in India but in other countries of South Asia as well (UNODC 2005). There is the evidence that most injecting drug users in the country inject pharmaceutical preparations that include opioid drugs such as buprenorphine, pentazocine and dextropropoxyphene capsules, usually mixed with other sedatives diazepam, promethazine and pheniramine (UNODC and MSJE 2004b).

Until recently, it had been widely believed that the problem of injecting drug use (IDU) in the country is limited to the north-eastern states and certain metropolitan cities such as Delhi, Mumbai and Chennai. A fourteen-city Rapid Assessment Survey (UNODC and MSJE 2002) conducted in 2001, documented the presence of injecting drug use in many other cities of the country other than the north-eastern states and metropolitan cities.

SHARAN, an NGO working in the area of drugs and HIV, has recently documented the presence of IDU in many parts of the country including Uttar Pradesh, Maharashtra, Goa, Kerala and Tamil Nadu (SHARAN 2007). We have also conducted two multi-site, nationwide studies. The first of these¹ was a knowledge, attitude and practices (KAP) study among drug users at about 300 sites from 26 states of the country (Ambekar and Tripathi for SPYM, 2006). In this study, data was collected from over 12,000 drug users, among whom 45 per cent were IDUs. This study highlighted that IDU should now be considered a nationwide phenomenon in the country and not just limited to certain geographical areas.

Injecting Drug Use and HIV

Injecting drug use and associated practices of sharing contaminated injection equipment is one of the major risk factors for acquiring and transmitting HIV infection in India. It is estimated that among AIDS cases only about 3 to 4 per cent cases are transmitted by IDU but the prevalence of HIV sero-positivity among IDUs is alarmingly high in the country (NACO 2006). The explosive HIV epidemic situation among IDUs, which initially began



"An educational panel developed by the SPYM on Drugs-HIV issues"

¹ Another study has been referred to elsewhere in the document.

in the north-eastern states, in the mid 1990s, can be considered to be gradually stabilising now (UNODC 2005). Conversely, in other parts of the country now, HIV prevalence among IDUs is on the rise. According to the latest sentinel surveillance figures, (among all the vulnerable groups), IDUs have the highest prevalence of HIV infection – more than 10 per cent (NACO 2006). Indeed, many sentinel surveillance sites in the country have shown the HIV epidemic to have crossed the threshold of a concentrated epidemic – 5 per cent sero-prevalence – among IDUs. In the two north-eastern states of Manipur and Nagaland, IDU is regarded as the primary driving force behind the generalised HIV epidemic.

How many IDUs are there in the country?

India figures among the developing and transitional countries with the “largest populations of IDUs” along with Brazil, China, and Russia (Aceijas et al 2006). However, the question – ‘how many IDUs are there in the country?’ – has never been answered satisfactorily. The largest of the epidemiological studies in the country – the National Household Survey – found a prevalence of 0.1 per cent of IDU among the adult male population of the country (UNODC and MSJE 2004). However, this prevalence, though derived from a nationally-representative general-population sample, cannot be used to project and estimate the size of IDU population for the entire country. There are two reasons behind this: First, the sample size of the national survey was inadequate to reliably estimate the prevalence of IDU. Secondly, IDU is generally regarded a hidden phenomenon and hence a household survey is not usually expected to be able to ‘capture’ the IDUs. Still, notwithstanding these limitations, if this prevalence (0.1 per cent) is projected to the national population, it could be estimated that there are about 200,000 IDUs in the country, which, by all accounts, appears to be a gross underestimation.

Various experts, on various occasions have quoted figures for the number of IDUs in the country as a whole or in specific cities of the country. Dorabjee and Sampson (2000) from a rapid situation assessment (RSA) of injecting drug use in India at various sites, quoted the following figures: New Delhi 25,000-30,000; Manipur 15,000-20,000; Mumbai 38,000; Kolkata 10,000-15,000 and Chennai 10,000-15,000. Similarly Aceijas and colleagues (2004) in a global overview of HIV among IDUs quoted a rather wide range - from 5,63,000 to 2,025,000 – for the estimated number of IDUs in India.

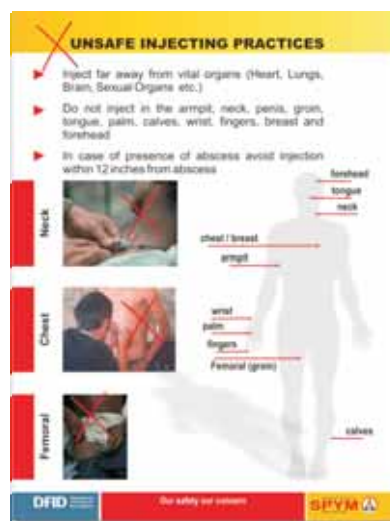
As a part of the National AIDS Control Programme, various state AIDS control societies have also been conducting mapping and size estimation exercises at various points in time. However, in general, there have been many methodological limitations in all these exercises.

Under the peer led intervention which was funded by DFID and conducted by SPYM at 300 sites in India, we conducted an IDU size estimation study (Ambekar and Tripathi for SPYM, 2007). The scope of this study was limited to the sites where the peer led intervention was already underway. These 300 sites were spread across 26 states throughout the country. Rather than providing a precise estimate of the number of IDUs in city/district/state, our objective was to identify sites which had a sizeable number of IDUs for future interventions focused especially on IDUs. By using a network-based approach – the nomination / enumeration technique – we could identify many sites, where they were present in sizable numbers. Most of these sites were in northern states of India, viz. Punjab, Haryana, Uttar Pradesh, Jharkhand and Bihar. However, the methodology adopted did not permit us to generate a state-wide or even district-wide estimation of number of IDUs. Still, the information generated from the study was valuable enough to indicate that there may be a sizable number of IDUs in Punjab and Haryana.

Thus, precise estimates on the number of injecting drug users in the country or even in certain states and/or districts remain elusive. More than any other reason, we believe the primary reason behind this knowledge gap is the complex nature of the problem of IDU, which raises certain methodological issues.

IDU size estimation: Methodological issues

Defining IDUs: The first methodological issue which needs to be addressed is *who is an IDU*? Someone who has injected any drug ever in his/her lifetime? Or is it someone who has been injecting recently, i.e. yesterday or last week or last month? Should someone injecting only once or twice a month be considered an IDU or only someone who is *dependent* on injecting drugs should be regarded an IDU? Varied definitions and criteria have been used across studies. There seems to be a consensus though, that for the purpose of HIV prevention interventions 'current'² IDUs should be the focus. But for the purpose of the drug-dependence treatment however, even occasional injectors will have to be addressed as they are also vulnerable and may escalate their frequency of injecting and turn into 'current' IDUs. It is a well-known fact that many IDUs, especially in India (UNODC and MSJE 2004), keep switching between non-injecting (i.e. heroin 'chasing') and injecting, thus keep falling in and out of the definition of 'current' IDU.



"An educational panel developed by the SPYM on Drugs-HIV issues"

Geographical issues: Yet another issue is related to the geographical domain under study. Should the area of study be limited to the city / town or should it be larger in scope extending to the whole district or even the state. In general, broadening the geographical domain dilutes the methodological robustness and lowers the precision of the estimates. Programme planners and policy makers on the other hand need estimation figures over typically broader areas; this data helps them in resource allocation.

Behavioural issues: The IDUs are at risk of HIV transmission because many of them share contaminated injection equipments. Thus, for the purpose of devising interventions, estimating the number of IDUs who have a history of or are vulnerable to sharing injection equipments are the first priority.

Hidden phenomenon: Drug use in any form and especially injecting drug use are generally regarded as hidden phenomena. Injecting drug use is not only illegal but is also socially stigmatised. The advent of the HIV epidemic and the consequent label of 'high-risk group' on IDUs, unfortunately has inadvertently driven them to further stigmatisation and has forced them to go underground. This makes accessing IDUs for the purpose of interventions and / or research extremely difficult. This is precisely the reason why the conventional population based methodologies such as household surveys are not appropriate to capture this population.

Implications of findings: At times, the purpose for which size estimation is being conducted may also potentially influence the methodology and ultimately the findings. Typically, the 'official sources' are often criticised for underestimating the magnitude of the problem. On the other hand, service provider organisations, when involved in conducting size estimation

² Even 'current' IDU has been defined variously; From people injecting in last one month to those injecting in last six months have been considered 'current' IDUs.

exercises, are often accused of generating over-inflated estimates. In fact, very often, size estimation exercises conducted in a transparent manner with methodological robustness have found estimates *lower* than those published until such studies were conducted (UNAIDS and FHI 2003). The recent revision of estimates of the number of HIV infected individuals in India is a prime example (UNAIDS 2007).

SIZE ESTIMATION TECHNIQUES: A BRIEF OVERVIEW

Various methods have been described in the literature for estimating the size of population at risk of HIV (UNAIDS and FHI 2003). However, it must be remembered that there is no single method which could be described as the 'Gold standard' for size estimation. All these methods have their own advantages and limitations. These include:

- **Census and enumeration:** In the census method, an attempt is made to count every individual in the population. In the enumeration method, instead of counting every individual, sample of units are chosen (e.g. an IDU 'spot' or a 'shooting gallery'). Though mathematically straightforward, these methods are not well suited for hidden populations such as IDUs.
- **Population survey:** Population survey methods basically entail surveying the general population, or subsets of the general population, using a representative sample. The basic advantage is that the results, if conducted properly, can be extrapolated to a large area or even the whole country. However, this is also not suitable for behaviours or phenomena which are relatively rare (such as IDU) in the general population, since a very large sample is required to reliably estimate the prevalence, making the process too resource-intensive.
- **Nomination method:** In the nomination method, the small but visible fraction of a larger hidden population (such as IDUs) is contacted and asked to provide names of other individuals 'like them'. All the names in a given unit are then counted; duplicate names are removed, to estimate the total size of the population. However, in this method some population sub-groups which do not mix with others and remain secluded are likely to be missed. Our recently concluded study, referred-to earlier, is an example of size estimation using this technique (Ambekar and Tripathi for SPYM, 2007).
- **Capture-recapture method:** The capture-recapture method essentially entails, counting the members of the target population once, and then after a period of time counting again to find out how many people have been recounted. Statistical analyses are then performed to estimate the total number of members of the population based on their probability of being 'captured'. This method is also useful for estimating size of hidden populations.
- **Multiplier method:** In the multiplier method the data is collected from two overlapping sources. For example, one source could be an agency providing services to the clients (such as a hospital or a drug treatment centre) another source could be the population at risk (i.e. the clients) itself. Collecting data from one source (e.g. the hospital admission register) tells us how many individuals actually receive services from the hospital. Collecting another set of data from population in the community tells us what *proportion* of individuals in the community receives services from the hospital. Multiplying the two provides the estimate of the probable size of the population in the community. This method is suitable when adequate record keeping exists and when the first source of data (e.g. the hospital) and second (e.g. the population in the catchment area of the hospital) correspond to each other. This is the method we have used in the current study (described in the following pages).

Background of the Study: Size estimation of IDU in Punjab and Haryana

There was a need to estimate the size of IDU population in this part of the country, for which no reliable estimates exist. In February-March 2007 UNAIDS commissioned SPYM to conduct a study on estimation of number of IDUs in Punjab and Haryana including the Union Territory of Chandigarh. For this purpose, experts from the National Drug Dependence Treatment Centre, All India Institute of Medical Sciences, New Delhi were engaged to develop methodology, train the staff involved in data collection, assist in monitoring and evaluation, analyse the data and present the final report. In the initial phase, meetings were held with multiple stakeholders to discuss various methodological issues and implementation arrangements. Subsequently, the methodology was developed, pilot-tested, shared with all the stakeholders, revised and the study was conducted from April 2007 to June 2007. This document is the report of this study (on Size estimation of IDU in Punjab and Haryana).

Methodology

Methodologies such as population based surveys (e.g. a household – general population survey) are not very appropriate to reliably pick up the IDUs and provide estimates of their numbers. On the other hand, injecting drug use is largely a group activity. Earlier studies conducted in this part of the world have also revealed that, by and large, IDUs often inject in groups (UNODC and MSJE 2004a; UNODC and MSJE 2004b). Hence, network-based approaches are more appropriate to reach out to IDUs.

Since, reliable data on the number of IDUs admitted at various NGO drug-treatment centres exists¹; we decided to use **multiplier method** for estimating the size of IDUs in the selected districts of Punjab and Haryana. However, as described earlier, for multiplier method, data from two sources were required. The in-patient records from the NGO drug-treatment centres constituted one source for the data. For another source of data, we required an unbiased sample of IDUs from the sites where the study was conducted. For this purpose we employed a network-based approach - **respondent driven sampling (RDS)** - for this study.

Objective of The Study

The objective of the study was **to estimate the number of IDUs in the selected districts of Punjab, Haryana and the Union Territory of Chandigarh.**²

Definition of IDU

For the purpose of this study, we regarded *any person who has used any psychoactive drug through injections in a non-medical context – ‘within previous six months’* as an IDU. Various injecting practices were also enquired into.

Pre-study Activities

Before we embarked upon collecting the data, a number of meetings were held with the NGOs working in the area of drugs and HIV in Punjab and Haryana. Their views and opinions about the IDU situation in various parts of Punjab and Haryana were obtained. The methodology of the study was also proposed to them and their feedback was obtained.

Implementation Arrangement:

The India office of Joint United Nations Programme on HIV/AIDS (UNAIDS) provided the financial support to the project. The project was carried out by the SPYM in partnership with the NGOs in Punjab, Haryana and Chandigarh. All the participating NGOs are running drug de-addiction centres, supported by the Ministry of Social Justice and Empowerment, Government of India. They had also been implementing a peer led intervention for reducing risk of HIV among drug users, supported by DFID. For the purpose of technical support, experts

¹ The NGO drug-treatment centres in Punjab and Haryana from where the data was collected, receive support from the Ministry of Social Justice and Empowerment, Government of India. Under the Drug Abuse Monitoring System of the Ministry, the NGOs maintain and periodically submit the statistics on number of clients seeking services from them as well as their clinical profile.

² The logistic concerns did not permit us to adopt a methodology which would directly provide estimates of the IDU population size for the entire states of Punjab and Haryana. Still, an attempt has been made to project the estimated prevalence of IDU among male population found at these sites on the entire male population of Punjab, Haryana and Chandigarh (see section on ‘findings’).

from National Drug Dependence Treatment Centre, All India Institute of Medical Sciences, New Delhi were engaged. The team from Family Health International (FHI), India, with their considerable experience and insight also guided and provided technical backstopping on many occasions. At every step, the progress of the study was informed to multiple stakeholders including those from National AIDS Control Organisation (NACO), National Institute of Social Defence (NISD), UNAIDS, FHI and others.

Geographical Scope:

Since the primary objective of the study was to obtain estimates of number of IDUs, in selected districts of Punjab and Haryana, including Chandigarh, the districts (RDS ‘centres’) were selected on the basis of:

- The anecdotal information available so far from the NGOs supported by the Ministry of Social Justice and Empowerment indicating presence of injecting drug use in these districts.
- The preliminary findings from the recently concluded size estimation exercise (based on nomination/enumeration technique and conducted in specific areas *within* these districts).
- Logistics and feasibility concerns. Since data was required to be collected from two different sources (a drug treatment centre as well as a sample of IDUs from the community in the catchment area of the drug treatment centre) the cities / towns in which there were established NGOs, running both a drug treatment centre as well as peer outreach activities in the community were chosen.

The final list of the cities where the survey was conducted was derived in a participatory manner. In a meeting organised by SPYM at Chandigarh, in April 2007, NGOs working in Punjab and Haryana were invited to participate in the survey and thus their concurrence was obtained. Names of the districts where this survey was conducted can be found in the table 1.

It should be noted that Centres with the mark “*” were a combination of two closely situated districts. In these districts, two RDS centres were functional and subjects were recruited from both the districts. The final study sample is a combination of the samples recruited at both sites. Similarly, the findings also apply to the combined districts as a whole.

Thus, overall, the survey was conducted in 11 RDS domains. However, a total of 16 RDS centres were involved in collecting data, each one being run by a local NGO.

Table 1: Districts where survey was conducted

S. No.	State	Name of District(s)
1	Punjab	Gurdaspur
2	Punjab	Faridkot-Moga*
3	Punjab	Ludhiana
4	Punjab	Ropar-Mohali
5	Punjab	Patiala
6	Haryana	Kurukshetra-Kaithal*
7	Haryana	Jind
8	Haryana	Ambala
9	Haryana	Narnaul-Rewari*
10	Haryana	Sonepat- Kharkhoda* (both in Sonapat district)
11	Chandigarh	Chandigarh-Panchkula*

* Centres that were a combination of two closely situated districts

The maps below show the districts where survey was conducted. As shown in the figure 1, the sites were quite evenly distributed across both states.

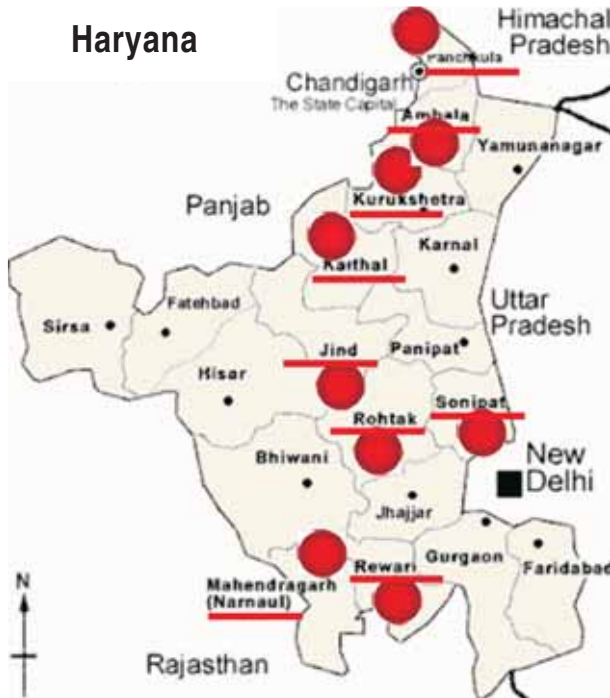
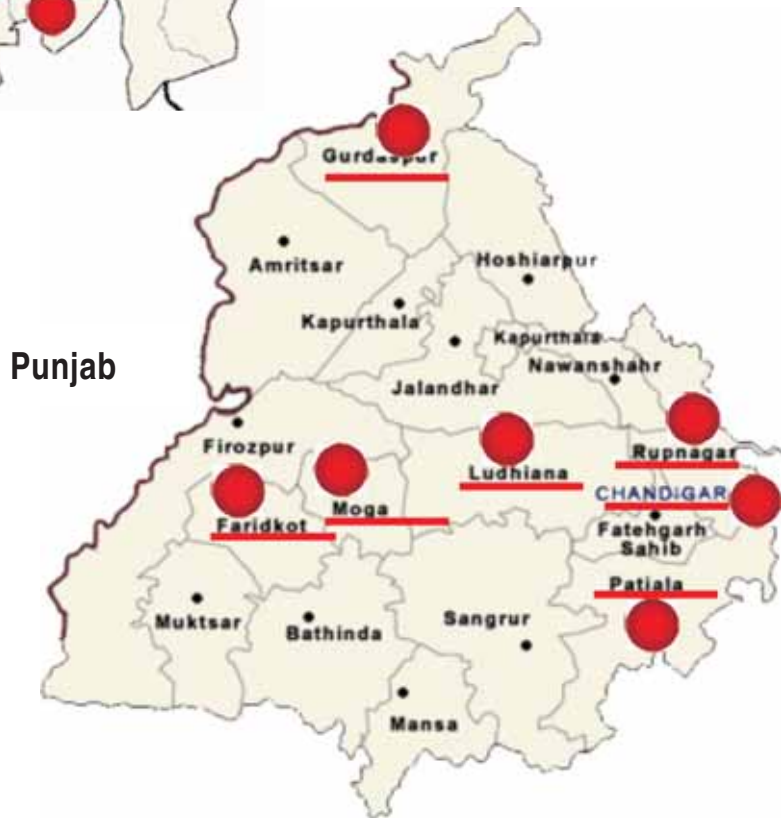


Figure 1: Maps of Punjab and Haryana showing districts where the survey was conducted



Training

All the implementing partners were trained in a three-day training programme conducted by the SPYM at Chandigarh on 6-8 April 2007. Participatory nature of the training programme ensured that all NGO staff members understood their respective roles and responsibilities fully. Overall, more than 50 participants received training on all the aspects of the study. A mock RDS exercise was conducted to provide a 'hands-on' experience to the participants. Additionally, a RDS manual for implementing NGOs was also prepared and circulated among NGOs.

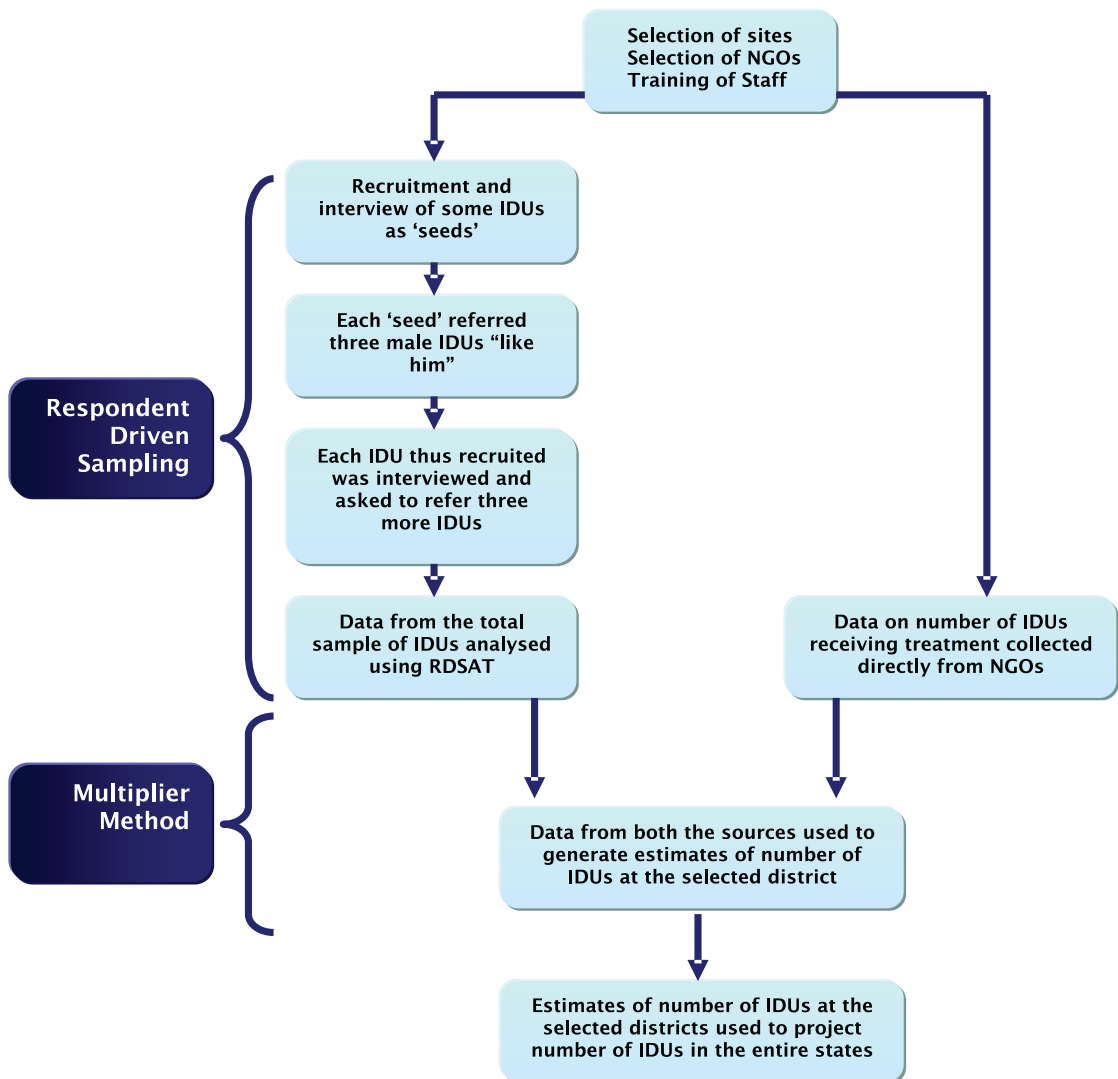


The training session for NGO staff in progress



Participants representing various NGOs

Figure2:
Steps involved in the study



Steps in Data Collection

As seen in figure 2, various steps in the methodology could be described in two broad sub-heads, (i) Respondent Driven Sampling and (ii) using multiplier method for estimating the number of IDUs in each district. We begin by describing the various steps under **Respondent Driven Sampling (RDS)**. Box 1 presents a brief overview of the respondent driven sampling.

Box 1: Respondent Driven Sampling

At each of the site, 20 current IDUs were recruited as seeds. They were interviewed and were provided three coupons each to refer their three IDU peers. Upon referring each client, they were provided an incentive. Thus each respondent recruited three other respondents till the desired sample-size or the limit of the duration of data collection (four weeks) was reached. Each respondent thus recruited was interviewed. Once the data collection was over, the data was analysed using RDSAT.

A. Respondent Driven Sampling (RDS)

1) Sample Size Calculation

At each of the RDS sites the target was to recruit about 300 IDUs. The sample size was determined using the following formula:

$$\text{Sample size (n)} = Z_a \times p \times (1-p) / d^2$$

Where,

n = Required sample size

Z_a = Standard normal value at (1-a) % level of confidence

p = Prevalence rate

d = Precision level

Assuming an indicator value ('p') of 10 per cent (i.e. proportion of IDUs likely to have been admitted in the NGO treatment centres in the recent past) and with a 95 per cent degree of confidence, the sample size 324 was arrived at (assuming a design effect of 1.5 for RDS). This was rounded off to 300. Thus all the RDS centres were asked to continue recruitment of the respondents till the approximate sample size was reached. In case of sites that had two RDS centres for one single domain, both the RDS centres were asked to continue recruiting till the combined sample size reached adequate level.

2) Establishment of RDS Centre

Each site where the survey was conducted had one RDS centre. For the purpose, one room in the treatment centre was designated as the RDS room. Each RDS room had adequate office space and infrastructure for interview, record-keeping, storage of incentives etc. Adequate space for interview was arranged ensuring privacy and confidentiality.

3) Staff Involved in Implementation

At each RDS centre, three staff members already working with the agency were identified and trained to collect data for the study. The project manager of the NGO was designated as 'RDS coordinator'. His / her responsibilities included:

- Overall supervision and coordination
- Interview of all the respondents
- Being in-charge of handing over incentives
- Data storage and transmission to SPYM

In addition, two peer educators working with the NGO were designated as ‘RDS managers’. They were responsible for:

- Management of RDS process (coupon verification, entry into register etc.)
- Motivating respondents for recruiting their friends
- Avoiding duplication

4) Recruitment of ‘Seeds’

At each RDS site 20 ‘seeds’ were recruited, i.e. IDUs who were chosen to start the recruitment process – the initial respondents. The selection criteria for seeds were:

- The person should have been ‘current’ IDU (having injected at least once in last six months)
- IDUs who were beneficiary of the recently concluded Peer-led intervention were preferred as the peer-educators from the NGO already had rapport established with them
- IDUs with good communication skills were preferred as they were expected to motivate their friends to recruit more respondents
- Care was taken to choose seeds belonging to a variety of backgrounds, i.e., different age groups, different socio-economic backgrounds and different geographical areas within the site.



A participant convincing his peers to join the study as a respondent

Each seed was interviewed and provided three coupons. The seeds were instructed to recruit three other IDUs who were like them and among the people they personally knew. The instructions given to each seed have been summarised in the adjoining box (box 2).

Box 2: Instructions for Recruitment Process

Here are three coupons for you to use to recruit other IDUs. Please make sure that the persons to whom you give the coupons meet the eligibility criteria as listed below:

- Males, more than 18 years, injected in last six months, you know them personally
- Please make sure the person to whom you give the coupon has not received this same coupon from someone else
- Avoid giving coupons to strangers. Select someone who you know by name and who you have seen in the past one month.
- Please inform those you give the coupon that
 - Information collected during the study will be kept confidential
 - They will be asked to complete a brief questionnaire
 - The interview will take about 10 minutes
 - Upon recruitment in the study, they will receive compensation for their time (a cap), Additionally, they will receive compensation for each person they recruit (up to a maximum of three)
- Offer to accompany to the person recruited to the RDS centre.

5) Recruitment of Respondents

Each respondent was expected to be interviewed, collect the primary incentive, collect three coupons, give these coupons to three of his friends and ask them to contact the RDS centre for their interviews. For each of the IDUs recruited by the respondents he was provided another incentive. Thus, after recruitment of three IDUs by him each respondent received four incentives (one primary incentive and three secondary incentives). In a participatory manner, the implementing NGOs were asked their opinions about the type of incentives most appropriate for their area. Thus, through consensus, a cap was given as the primary incentive, while a T-shirt, a towel, and wrist-watch were the three secondary incentives. Figure 3 shows the photograph of actual incentives offered to respondents.

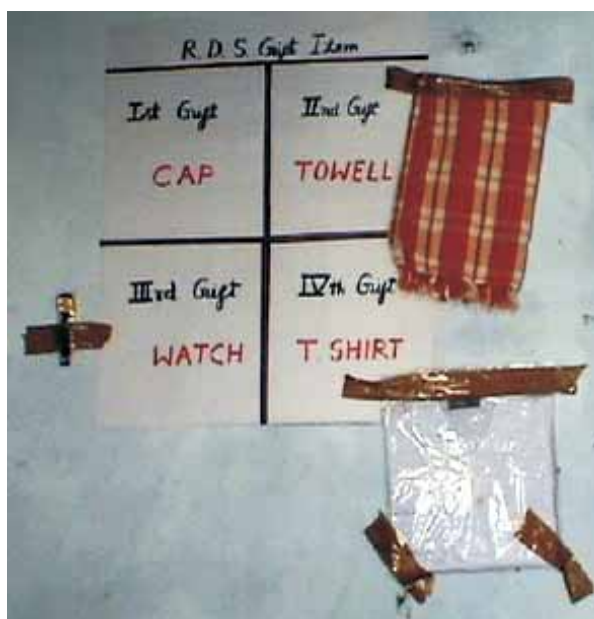


Figure 3: Incentives ('gifts') offered to the respondents

6) Coupons

As seen in the adjoining figure (figure 4) there was two parts to the coupon. The upper half of the coupon was, **Recruitment Coupon**, which was given by the respondent to the person recruited by him. The lower half - **Redemption Coupon** – was retained by the primary respondent to claim his incentive. For example, Mr. Anil was recruited and interviewed by the RDS team. He was given three coupons. He gave upper halves of one coupon each to Rajesh, Suresh and Mahesh. When Rajesh, Suresh and Mahesh, reached the RDS centre, returned the upper half of the coupons to the RDS team and were interviewed, Anil brought the lower halves to claim his three incentives.

Figure 4: Model of the coupons used for recruitment through RDS

Punjab and Haryana IDU Size estimation Survey
RECRUITMENT COUPON

Primary Respondent ID No. _____

Please visit our centre at the following address to participate in a survey.

ABC Centre
Near DEF
XYZ Road
GHI, Phone No.XXXXXXXXXXX

Time: 9:00 AM to 5:00 PM

Upon presenting this coupon and participating in our questionnaire survey, you will receive a token of appreciation.

Coupon No. _____ Coupon Valid till _____

Punjab and Haryana IDU Size estimation Survey
REDEMPTION COUPON

Please present this coupon to claim your token of appreciation at:

ABC Centre
Near DEF
XYZ Road
GHI, Phone No.XXXXXXXXXXX

Time: 9:00 AM to 5:00 PM

You will receive a gift for recruiting each person.

Coupon No. _____ Primary Respondent ID No. _____

7) Interview of Respondents

A brief semi-structured questionnaire was used to elicit information from the respondents. Information was obtained on demographic parameters, injection practices, and treatment/intervention received by the respondent. Each interview took about 10 – 15 minutes. The questionnaire was a part of RDS manual provided to all the RDS centres.

8) Data Handling

All the questionnaires as well as other records were submitted to SPYM at the end of data collection. The team at SPYM was trained for data entry. Once all the data was entered, it was checked thoroughly for inconsistencies and errors. Wherever errors were found, the data was cleaned so that it met the standards for analysis.

9) Ethical Issues

Care was taken to ensure that at no point in time identity of any respondent was disclosed. Though the respondents were recruited by their peers after explaining them all the procedures and their implications, upon reaching the RDS centre, the recruitment and interview process was once again explained to them by the staff and their verbal informed consent was obtained. Additionally no cash incentives were provided to the respondents. Even the ‘gifts’ received by the respondents were also of small monetary value. This procedure of recruitment is in line with the medical research ethical principles of *beneficence, autonomy, and justice* (Hughes 1999).

B. Multiplier

We used the following multiplier to estimate the size of the IDU population: “Proportion of respondents reporting that they were admitted to the NGO treatment centre in the past six months (October 2006 to March 2007)” Reasons to choose this multiplier were:

- All the NGOs maintain records of admission at their treatment centres. Moreover, this data is readily available as it is regularly submitted to the Ministry of Social Justice and Empowerment as a part of the Drug Abuse Monitoring System (DAMS).
- Collecting data on this parameter also provided an opportunity to assess the treatment service utilisation pattern among IDUs.

Additionally, a separate questionnaire was designed and sent to all the participating NGOs. Senior functionaries of the NGOs were requested to provide information on number of clients receiving various (in-patient treatment, peer education etc.) services from their NGO in past six months.

The two streams of data were used for estimating the size of the IDU population, in the district.

Data Analysis

The data was analysed using Respondent Driven Sampling Analysis Tool (RDSAT), version 5.6. The software is freely available on the web along with a manual to use it (<http://respondentdrivensampling.org>). All the proportions presented in the section on ‘results’ are RDS estimates. Additionally, for two continuous variables – age of respondents and age when they first injected a drug – data was also analysed using SPSS version 10.0. This data was obtained as un-weighted means and standard deviations.

Time Line

Table 2 shows the chronology of events. While the data collection was over within four-five weeks at most of the RDS centres, the data cleaning required a considerably longer duration.

Table 2: Chronology of events

Event	Concluded in...
Site and NGO selection	1 st week of April 2007
Selection and Training of staff	2 nd week of April 2007
Beginning of data collection	3 rd week of April 2007
Completion of Data Collection	3 rd week of May 2007
Completion of Data entry	4 th week of May 2007
Completion of Data cleaning	3 rd week of June 2007
Completion of Data Analysis	4 th week of June 2007
Draft Report generation	1 st week of July 2007

Monitoring and Evaluation

A team from SPYM was trained for monitoring the process of data collection. The team visited each RDS centre at least twice, while the data collection was in progress. During these visits all aspects of the study, were closely observed, staff members from the NGOs were guided and the whole process was documented using a structured monitoring tool. Thus, almost every week a summary progress report was generated and shared with all the stakeholders. Close monitoring ensured that data collection was completed on time and with minimum errors.

Results

The results of the study have been presented in three sub-sections: (A) The Respondent Driven Sampling (RDS) survey, (B) Data collected from NGO treatment centres and (C) Calculation of the size of IDU population.

A. RDS Survey

Sample Size

Table 3 shows the sample sizes at each site. At most of the sites, the desired sample size was reached within four to five weeks of data collection. However, as seen from the table, there is slight variation among the sites. While at some sites, even with only one RDS centre, the sample size crossed the 300 mark (e.g. Jind, Ludhiana), at others, even with two RDS centres simultaneously involved in collecting data, the sample size fell just short of 300 (e.g. Rewari-Narnaul). Overall, data was collected from a total of 3311 respondents. Even without considering the method of recruitment (i.e. RDS), this figure of 3311 IDU respondents makes this study the largest on IDUs in Punjab and Haryana till date.

Table 3: Sample Size at each site

Site	Sample Size
Ambala	291
Chandigarh - Panchkula	326
Faridkot - Moga	309
Gurdaspur	297
Jind	311
Kaithal – Kurukshetra	318
Ludhiana	318
Patiala	272
Rewari-Narnaul	276
Ropar-Mohali	297
Sonepat-Kharkhoda	296
TOTAL	3311

Demographic Parameters

Age

One of the criteria for recruitment of respondents was that they should be aged 18 years or above. As the table 4 clearly shows, at most of the sites, the majority of respondents were between the age group of 18 to 30 years. This was not true for three sites – Jind, Rewari-Narnaul and Sonepat-Kharkhoda, all in Haryana – where a large majority of the respondents were over 30 years of age. For Chandigarh and Panchkula, the mean age of the sample was 30.14 years with a standard deviation of 6.92 years.

Table 4: Age

Site	Proportion of respondents in the age group 18-30 years
Ambala	75%
Faridkot – Moga	65%
Gurdaspur	69%
Jind	32%
Kaithal – Kurukshetra	57%
Ludhiana	92%
Patiala	68%
Rewari-Narnaul	35%
Ropar-Mohali	68%
Sonepat-Kharkhoda	48%

Occupation

The proportion of unemployed respondents ranged from as low as 10 per cent at Ropar-Mohali to as high as 58 per cent at Sonepat-Kharkhoda. Among those who were employed, common categories of occupation were labourers, self-employed, small businessmen and agriculture. Interestingly, at Ludhiana, a sizable proportion – 22 per cent were students. This is in line with the age group found at Ludhiana; table 4 shows that at Ludhiana, an overwhelming majority – 92 per cent – were between the ages of 18 to 30 years.

Table 5: Employment status

Site	Proportion of unemployed respondents
Ambala	38%
Chandigarh - Panchkula	22%
Faridkot - Moga	39%
Gurdaspur	—
Jind	20%
Kaithal – Kurukshetra	13%
Ludhiana	26%
Patiala	19%
Rewari-Narnaul	11%
Ropar-Mohali	10%
Sonepat-Kharkhoda	58%

— Data not available

Marital Status

There was considerable variation with respect to the marital status of the respondents. The proportion of unmarried respondents ranged from as low as 18 per cent at Jind and Ropar-Mohali to as high as 64 per cent at Ambala. Similarly, proportion of respondents classified as 'married and staying with wife' ranged from 21 per cent at Gurdaspur to 80 per cent at Ropar-Mohali. In general a minority proportion belonged to other categories – divorced / widower / cohabitating.

Table 6: Marital Status

Site	Proportion of unmarried respondents	Proportion of married respondents	Proportion of respondents - divorced/widower/ cohabitating
Ambala	64%	22%	14%
Chandigarh - Panchkula	46%	50%	4%
Faridkot - Moga	47%	32%	21%
Gurdaspur	62%	21%	17%
Jind	18%	69%	13%
Kaithal – Kurukshetra	60%	36%	4%
Ludhiana	60%	28%	12%
Patiala	40%	48%	12%
Rewari-Narnaul	23%	58%	19%
Ropar-Mohali	18%	80%	2%
Sonepat-Kharkhoda	46%	43%	11%

Injecting Practices

Duration of Injecting

Respondents were asked at what age they first used any drug through injectable route. Based on their responses the duration of injecting drug use was calculated. As seen in the table 7, mean duration of IDU was around 3 to 7 years everywhere, except for Ropar, where mean duration of injecting was more than 10 years. This indicates that IDU is probably a recently introduced (and growing) phenomenon in this part of the country. This data was not available for the site, Chandigarh – Panchkula. Interestingly, at Ludhiana, where an overwhelming majority of respondents were young (92 per cent between 18 to 30 years, table 4), the duration of injecting was found to be the shortest (2.7 years).



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Table 7: Duration of injecting

Site	Mean duration of IDU in years (un-weighted)	Standard Deviation
Ambala	4.05	3.09
Faridkot - Moga	6.91	5.01
Gurdaspur	4.59	3.62
Jind	4.45	3.45
Kaithal – Kurukshetra	3.20	2.37
Ludhiana	2.70	1.64
Patiala	3.88	2.69
Rewari-Narnaul	5.40	5.98
Ropar-Mohali	10.39	7.74
Sonepat-Kharkhoda	4.29	3.44

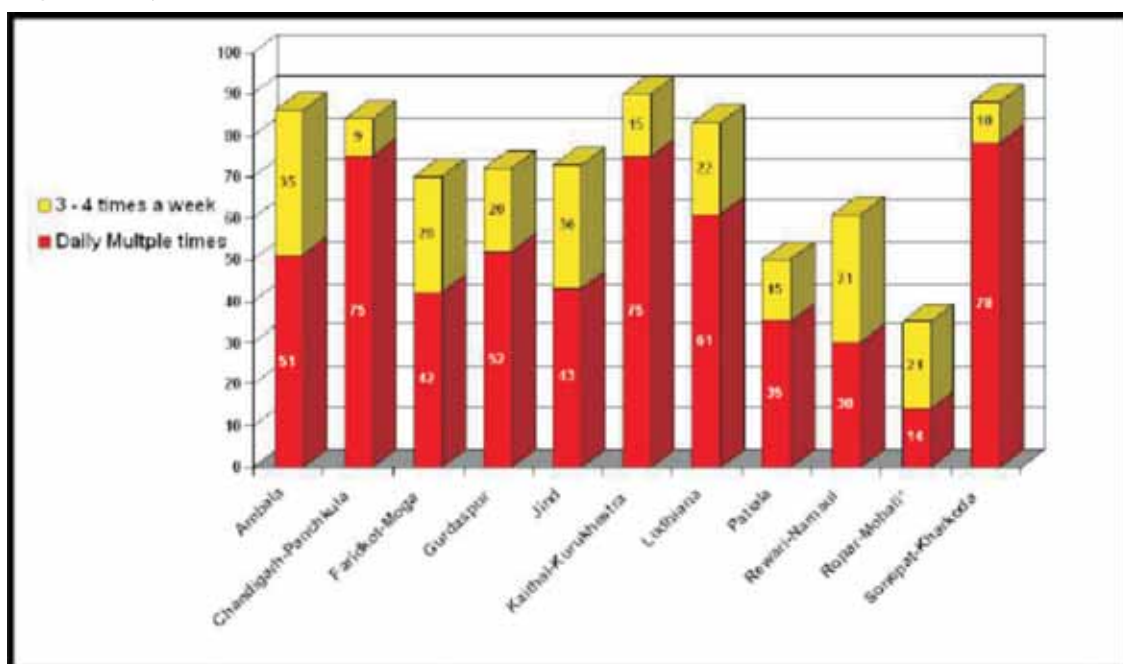
Commonly Injected Drugs

Pharmaceutical preparations appear to be the choice of injected drugs of IDUs in Punjab and Haryana. These include buprenorphine, pentazocine and a variety of sedatives (diazepam, promethazine, pheniramine etc.). A few respondents also reported injecting brown sugar (heroin).

Injection Pattern

Most respondents used to inject daily, multiple times. This was followed by the group which injected about 3-4 times per week. Figure 5 shows the proportion of respondents who used to inject daily, multiple times (dark red coloured part of the columns) and proportion of respondents who injected about 3 to 4 times per week (light yellow coloured part of the columns). Only a minority everywhere were occasional injectors. In case of the site Ropar-Mohali however, there was a sizable proportion of respondents (43 per cent) who did not respond to the question about frequency of injections.

Figure 5: Injection Pattern



Sharing Injection Equipment

A sizable proportion reported sharing injection equipments 'ever' in their lifetime. Table 8 shows the proportion of respondents who reported sharing any injection equipment 'ever' in their lifetime as well as proportion of respondents who reported that they have never shared any injection equipment in their lifetime. At Ropar-Mohali, an overwhelming majority (96 per cent) of respondents reported that they have never shared any injection equipments. This data should be interpreted with caution, since as indicated in table 7, duration of injecting was highest at this site (more than 10 years).

Table 8: Sharing injection equipment

Site	Never shared any injection equipment	Shared injection equipment 'ever'
Ambala	6%	94%
Chandigarh - Panchkula	57%	43%
Faridkot - Moga	20%	80%
Gurdaspur	55%	45%
Jind	29%	71%
Kaithal – Kurukshetra	5%	95%
Ludhiana	47%	53%
Patiala	22%	78%
Rewari-Narnaul	28%	72%
Ropar-Mohali	96%	4%
Sonepat-Kharkhoda	66%	34%

Treatment / Intervention History

Respondents were asked whether they have received various interventions / services. More specifically, the questions were about receiving (a) oral substitution treatment, (b) needle syringe exchange services, (c) in-patient treatment at a drug-treatment centre and (d) peer outreach / education services. No one reported receiving **oral substitution treatment** ever. A small minority reported receiving **needle syringe exchange services** at Chandigarh-Panchkula and Gurdaspur.

Another question was about receiving in-patient treatment at any of the drug treatment centre 'ever'. Surprisingly, only a small minority reported getting admitted for **drug dependence treatment** 'ever'. At Ambala and Chandigarh this proportion was highest (Table 9).

Yet another question was about whether the respondent had been admitted in the nearest NGO treatment centre in the district in the past six months. For this purpose, the respondents were shown / read-out a list of all the NGO drug treatment centres in Punjab, Haryana and Chandigarh. Table 9 shows the proportion of respondents who were admitted for drug abuse treatment, anywhere, ever, as well as in the nearest NGO treatment centre in the past six months. An even lower proportion reported getting admitted in the past six months (which constituted the multiplier for size estimation, described later).



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Table 9: Receiving in-patient treatment for drug use

Site	Ever received in-patient treatment anywhere	Received in-patient treatment in past 6 months in the nearest NGO centre
Ambala	17%	3.5%
Chandigarh - Panchkula	15%	0.90%
Faridkot – Moga	1.30%	0.10%
Gurdaspur	9%	4%
Jind	9%	4%
Kaithal – Kurukshetra	11%	8%
Ludhiana	—	3%
Patiala	3%	1%
Rewari-Narnaul	4%	0.5%
Ropar-Mohali	12%	1.2%
Sonepat-Kharkhoda	2%	0

— Data not available

Another question was about **receiving peer education**. Since all the participating NGOs had been implementing Peer led intervention at these sites, it was interesting to find out how many IDUs had already been contacted by the peer educators earlier. There was again considerable variation among sites on this parameter. While, at Kaithal-Kurukshetra and Gurdaspur more than 80 per cent respondents reported that they had been in touch with the peer educators from NGOs, at other sites this proportion was quite smaller. Correspondingly, even fewer respondents reported having received peer education services in past 6 months.

Table 10: Receiving Peer Education

Site	Ever received Peer Education	Received Peer Education in past 6 months
Ambala	50%	31%
Chandigarh - Panchkula	47%	39%
Faridkot – Moga	16%	9%
Gurdaspur	81%	73%
Jind	54%	53%
Kaithal – Kurukshetra	88%	87%
Ludhiana	—	25%
Patiala	19%	0.80%
Rewari-Narnaul	—	9%
Ropar-Mohali	39%	14%
Sonepat-Kharkhoda	2%	—

— Data not available

B. Data Collected from NGO Treatment Centres

As described earlier, a questionnaire (on multipliers) was sent separately to all the NGOs and the senior NGO functionaries were requested to provide this data. Table 11 shows the total number of clients (i.e. non-IDUs + IDUs) as well as number of current IDUs having been admitted in the past six month. It is clear from the table that barring Gurdaspur (the NGO treatment centre which is known to have a larger bed-strength) almost similar numbers of total clients, as well as IDUs were admitted in past six months.

Table 11: Data from NGO treatment centres on number of clients admitted in past 6 months

Site	Total number of clients admitted in last 6 Months	Number of IDUs admitted in last 6 Months
Ambala	79	8
Chandigarh - Panchkula	81	7
Faridkot – Moga	83-91	7 - 11
Gurdaspur	252	33
Jind	92	7
Kaithal – Kurukshetra	89-77	9
Ludhiana	93	9
Patiala	87	11
Rewari-Narnaul	79-86	6
Ropar-Mohali	87	11
Sonepat-Kharkhoda	86-92	6

Similarly, table 12 shows the total number of clients (i.e. non-IDUs + IDUs) as well as the number of current IDUs having received peer education services in the past six month. There were large variations among sites on this parameter.

Table 12: Data from NGOs on number of clients receiving peer education in past 6 months

Site	Total number of clients receiving peer education in last 6 months	Number of IDUs receiving peer education in last 6 months
Ambala	49	27
Chandigarh - Panchkula	91-55	55 - 62
Faridkot - Moga	45-61	26-32
Gurdaspur	168	66
Jind	108	31
Kaithal – Kurukshetra	62-74	35 - 49
Ludhiana	67	41
Patiala	61	22
Rewari-Narnaul	155-68	41 - 47
Ropar-Mohali	88	47
Sonepat-Kharkhoda	46-96	18 - 31

C. Estimation of Size: Calculation of Size of IDU Population

For this purpose, the following formula was used.

$$\begin{array}{l} \text{Number of IDUs actually} \\ \text{getting admitted at the} \\ \text{NGO in last six months} \\ \text{(Table 11)} \end{array} \times \begin{array}{l} \text{Inverse of the proportion of the sample} \\ \text{reporting that they were admitted at the NGO} \\ \text{in last six month (Table 9)} \end{array}$$

Using this formula, the following figures could be obtained as the estimated size of the IDU population (with 95% confidence interval) at these sites.

Table 13: Estimated number of IDUs at various districts

Site	Size of IDU population (using in-patient treatment as a multiplier)		
	Estimated size	Lower limit	Upper limit
Ambala	229	218	240
Chandigarh - Panchkula	778	739	817
Faridkot - Moga	900	855	945
Gurdaspur	825	784	866
Jind	175	166	184
Kaithal – Kurukshetra	1125	1069	1181
Ludhiana	300	285	315
Patiala	1100	1045	1155
Rewari-Narnaul	300	285	315
Ropar-Mohali	917	871	963
Sonepat-Kharkhoda	300	285	315

Size estimation for the entire states of Punjab and Haryana

As described earlier, for logistic reasons, it was not possible to conduct this survey in all the districts of Punjab and Haryana. As the findings reveal, we have estimated size of male IDU population in five districts of Punjab, the Union Territory of Chandigarh and seven districts in Haryana¹. Projecting the estimated number of IDUs to the male population of the districts (according to 2001 census data) we have calculated following prevalence of IDU among male population in these districts (Table 14).

¹ It must be remembered that the district Mohali, was created after the census 2001 results have been published. This district includes two blocks - Kharar and Majri – which, earlier were part of Ropar (Rupnagar) District.

Table 14: Prevalence of IDU among male population at various districts

Site	Estimated size	Population of the district(s) (male)	Prevalence of IDU (in %)
Ambala	229	586180	0.04
Chandigarh - Panchkula	778	508,224	0.15
Faridkot - Moga	900	762552	0.12
Gurdaspur	825	1115126	0.07
Jind	175	510390	0.03
Kaithal – Kurukshetra	1125	774330	0.14
Ludhiana	300	1606087	0.02
Patiala	1100	977815	0.11
Rewari-Narnaul	300	691120	0.04
Ropar-Mohali	917	398628	0.23
Sonepat-Kharkhoda	300	563920	0.05

As table 14 indicates, there is a large amount of variation among all surveyed districts and no specific pattern is emerging. The highest prevalence is in Ropar – Mohali – Chandigarh – Panchkula area.

Interestingly, as the survey indicated, IDUs could be recruited in all the surveyed districts. Though figures for IDU prevalence for none of these districts could be applied to other, non-surveyed districts of Punjab and Haryana, still, an attempt has been made to project these figures for the whole state of Punjab. Excluding Ropar (Roopnagar) the size-estimation data for which has been combined with Mohali for this survey, there are a total of 16 districts in Punjab. Among these, five districts were part of our survey. These five districts range from smaller districts in terms of geographical area and population (Faridkot and Moga) to larger ones (like Ludhiana and Patiala). In terms of geographical spread also these five have been spread across Punjab. While one, Patiala, borders Haryana, another, Gurdaspur, borders Pakistan. These districts were selected on the basis of criteria already described under methodology. One of the criteria was presence of NGO drug treatment centres which could participate in our survey. However, NGO drug treatment centres are also functional in many other districts of Punjab (viz. Amritsar, Bhatinda, Hoshiarpur, Mansa) and Haryana (Faridabad, Gurgaon, Fatehabad, Hissar, Karnal, Panipat, Yamuna Nagar). Similarly, in the recent KAP study conducted as a part of the DFID supported peer led intervention (Ambekar and Tripathi for SPYM, 2006), IDUs could be recruited at almost all of the sites in Punjab and Haryana². In Haryana, in the KAP study, out of 511 drug users recruited from 10 sites, 30 per cent (n=151) were IDUs. Similarly, in Punjab, out of 547 respondents recruited at 11 sites, 41% (n=226) were IDUs. Hence, it can be argued that the phenomenon of IDU is spread across Punjab and Haryana and thus, figures of IDU prevalence in male population estimated in this survey could be applied to other districts of Punjab and Haryana as well.

Based on this logic, we have provided a range of likely population of IDUs in Punjab and Haryana (Tables 15 and 16). The lower limit of the estimated size is based upon the lowest prevalence of IDU estimated in our survey (0.02 per cent, Ludhiana, table 14), while the upper limit is based upon the highest prevalence (excluding Chandigarh-Panchkula-Ropar-Mohali)

² In the KAP study (Ambekar and Tripathi, 2006), the inclusion criteria was *any* drug use. The scope of the study included both IDUs as well as non-IDUs.

found in our survey (0.14 per cent, Kaithal-Kurukshetra, table 14). Similar approach has been used for Chandigarh-Panchkula-Ropar-Mohali.

Table 15: Estimated size of IDU population (*Lower limit*)

State / UT	Prevalence of IDU (in %)	Male Population	Estimated size
Punjab	0.02	12963362	2600
Chandigarh – Panchkula – Mohali	0.15	508224	762
Haryana	0.02	11327658	2265

Table 16: Estimated size of IDU population (*Upper limit*)

State / UT	Prevalence of IDU (in %)	Male Population	Estimated size
Punjab	0.14	12963362	18148
Chandigarh – Panchkula – Mohali	0.23	508224	1170
Haryana	0.14	11327658	15858

This approach obviously has many limitations. It could still be argued that IDU population in non surveyed districts is likely to be *lower* than even the lower limit of the estimates presented here. On the other hand it could also be argued that IDU population in non surveyed districts is likely to be *higher* than even the upper limit of the estimates presented here. Still, this represents the best-possible attempt, given the type of data which has been generated. Unless, similar surveys are carried out in the districts which were not a part of this survey, it would be extremely difficult to provide definite conclusions on size of IDU population in entire states of Punjab and Haryana. The evidence generated with this survey however, indicates that **the likely size of IDU population may be about 2600 to 18000 in Punjab, 762 to 1170 in Chandigarh-Panchkula and 2265 to 15858 in Haryana.**

Discussion

This study is first of its kind in Punjab and Haryana. There are many aspects related to the implementation and methodology which merit discussion.

The Participatory Manner of Planning and Implementation

From the initial stages of planning to development of methodology and onwards to data collection and analysis, the study was conducted in a participatory manner. The progress reports (generated by monitoring exercises) of the study were shared among all the stakeholders at all the stages. Even the selection of study sites and implementing NGO partners was conducted in a participatory manner. This ensured smooth implementation and completion of all activities within the stipulated timeframe. Additionally, feedback from the implementing NGOs was obtained on all issues, from the tools used for data collection to the types of incentives to be given to respondents, and accordingly refinements were made.

Methodology

The methodology used for recruiting IDUs in the study – respondent driven sampling – is still relatively new (Heckathorn 1997), particularly to this part of the world. A pubmed search for the term ‘respondent driven sampling’ yielded more than 70 results including eight review articles. This methodology has now been used in various studies across the world, focusing especially on population groups vulnerable to HIV such as IDUs, Sex Workers and MSM (Abdul-Quader et al 2006). From India, a web search revealed that the methodology has been used in other population groups such as sex workers (e.g. Shahmanesh et al 2006). Recently, Tun et al (2007) from Population Council have reported a behavioural survey in Delhi and Imphal among 1600 IDUs, using respondent driven sampling. Family Health International (India) has recently concluded a study on size estimation along with biological and behavioural survey of IDUs in north-east India, using respondent driven sampling.

The available evidence and experience indicates that RDS offers certain unique features (Heckathorn 1997). It reduces the biases associated with non-random recruitment, allows greater penetration into diverse groups of IDUs, and allows respondents to recruit only a limited number of respondents irrespective of their network size (Magnani et al 2005). In this manner it provides unbiased population estimates. Additionally, at the stage of analysis, RDS takes into account, the different network-sizes and to what extent each respondent has recruited others like him/her. Another theoretical advantage of RDS is that it is based on a dual incentive system, financial (or material) rewards in combination with peer pressure, which can be expected to reduce non-response bias. All these factors make RDS a superior method for recruitment as compared to conventional methods like snow-ball sampling.

Resources Required

The study was conducted using minimum of resources. NGOs already working on the ground implemented the study. Additionally, the staff members working already in the NGOs (project managers and peer educators) were involved in data collection. Thus, no new structures were required to be established. Moreover, the data collection was completed within just five weeks. It must also be remembered that April-May being the harvesting season in Punjab and Haryana, those respondents involved directly or indirectly in farming, would have found it difficult to find time to visit RDS centre, get interviewed and refer their three peers for the same. Still the

implementing NGOs managed to complete the data collection within four to five weeks. In fact at one particular centre, Gurdaspur, the sample size was reached within just 15 days. On the other hand, data collection within so short a time implied that on an average more than 10 respondents were recruited per working day. This much workload was prone to clerical errors during data collection, which was rectified during the stage of data cleaning. Thus, the data cleaning period was inordinately longer and took considerably more efforts than expected.

Selection of Sites

As mentioned earlier, the survey sites were selected on the basis of already available information as well as the preparedness of NGOs to participate in the survey. Though a variety of districts were surveyed in both Punjab and Haryana, it would have been useful to include Amritsar, one of the leading cities of Punjab where presence of injecting drug use has been documented for quite some time now (UNODC and MSJE 2002). Also, two major urban centres of Haryana – Faridabad and Gurgaon – which are regarded as a part of National Capital Region of Delhi were not surveyed.

Among 11 sites where survey was conducted, three were a combination of two closely situated districts – Faridkot-Moga in Punjab, and Kaithal-Kurukshetra and Rewari-Narnaul in Haryana. These sites had one RDS centre in each of the two districts. In Sonapat, in the single district of Sonapat we had two RDS centres. Yet another RDS centre in Ropar also catered to Mohali by recruiting respondents from Mohali.

Findings

Comparison with earlier studies

Though in this study, very few behavioural factors were studied, the results offer an opportunity to compare with earlier studies conducted in Punjab and Haryana. The most recent example of this is the KAP study conducted as a part of the DFID supported peer led intervention (Ambekar and Tripathi for SPYM, 2006). In Haryana, in the KAP study, out of 511 drug users recruited from 10 sites, 30 per cent (n=151) were IDUs. Among these, 69 per cent reported sharing injection equipments 'ever'. While in the current study, from the sites in Haryana, about 34 per cent to 95 per cent respondents reported sharing injection equipment. Similarly, in KAP study in Punjab, out of 547 respondents recruited at 11 sites, 41 per cent (n=226) were IDUs. Among these about 36 per cent reported sharing ever, as opposed to upto 80 per cent respondents in the current study.

Gender issues

We surveyed only the male population. The results also relate only to the male IDU population. Before the study began, there was no indication that there may be a sizable population of female IDUs in Punjab and Haryana. Still, one question in the survey questionnaire did ask the respondents about number of female IDUs they know. Barring a very minuscule proportion of respondents no one reported knowing any female IDUs. Thus it appears that IDU is predominantly a male phenomenon in Punjab and Haryana.

Age

The survey included only adult IDUs i.e. those aged 18 years or more. To confirm the pre-survey assumption that IDUs less than 18 years of age are very rare, one question in the

questionnaire asked about this. Only a minuscule proportion reported knowing any IDU less than 18 years of age.

Demographic variables

A sizable proportion of IDUs in Punjab and Haryana were found to be unemployed. This should be seen as worrying phenomena for states with relatively higher per capita income. Sizable proportions were married and staying with their wives. This has obvious implications for HIV epidemic. These findings indicate an urgent need of HIV prevention interventions to include regular sexual partners as well.

Injecting practices

Other than Ropar-Mohali where duration of IDU was more than 10 years, everywhere else the mean duration of IDU ranged largely from 2.7 to 6 years. This indicates that taking drugs through injections is probably a recently started practice among drug users of Punjab and Haryana. Most IDUs inject pharmaceutical drugs and very few inject brown sugar (heroin).

Treatment seeking

Yet another noteworthy find was the proportion of respondents ever receiving in-patient treatment was very small. It should be noted that other than the NGO treatment centres which took part in this survey there are other treatment facilities at the surveyed sites as well. Among survey sites, there are many districts which have Government-run de-addiction facilities. In the private sector also, there are opportunities for treatment of drug dependence. Still only a very small proportion of surveyed IDUs reported ever receiving in-patient treatment. This indicates the low levels of treatment seeking – behaviour among IDUs.

The survey also brings forth the issue of low rates of utilisation of treatment services. Barring Gurdaspur, at all the centres, the total number of clients receiving in-patient treatment during past six-month period was in the range of 76 to 93 (table 11). In other words, just about 15 clients per month. In fact, the number of IDUs getting admitted during the past six-month - period was too small, ranging from 5 to 11 (barring Gurdaspur, 33). This again points towards the fact that the existing treatment services are not being utilised fully.

By contrast, a much larger proportion of surveyed IDUs reported to have been contacted by the peer educators. Data collected from NGOs also revealed that a substantially larger number of IDUs were reached through the peer education approach in the last six months (table 12). It must be remembered that at all these sites the participating NGOs had been implementing an outreach-based peer led intervention to reduce HIV risk among drug users using recovering drug users as peer educators. This finding underlines the importance of continuing and in fact extending the outreach based peer education interventions.

Interventions regarded as very important for HIV prevention among IDUs – oral substitution and needle syringe exchange programmes – are practically non-existent at Punjab and Haryana. Among surveyed IDUs, while no one ever received oral substitution, a small minority – that too only at few sites – reported having ever received needle syringe exchange services.

Size of IDU population

Findings related to the most important objective of the study, size estimation, must be interpreted with caution. This survey was conducted in 11 sites which included a total of 13 districts from Punjab and Haryana and the whole UT of Chandigarh (including its satellite

townships – Panchkula and Mohali). In each district, a multiplier – having received in-patient treatment for drug addiction in last six months – has been used to estimate the size of the IDU population. The data on treatment records is submitted by the NGOs regularly to the Ministry of Social Justice and Empowerment, in a routine manner. Thus, this data could be seen as authentic. Interestingly, almost similar number of drug users have received treatment in all the surveyed NGO treatment centres. Most of these treatment centres have almost equal bed strength.

However, it must be borne in mind that this analysis is based on certain assumptions. One of the most important of these is that clients from a particular district seek treatment only in the treatment centre present in that district. Theoretically, it is always possible for a drug user from Gurdaspur (a surveyed district) to seek and receive treatment from a treatment centre in Amritsar (a non- surveyed district). In practice, however this is unlikely to happen to an extent affecting the results of this study. In the preliminary discussion with NGOs, the emerging consensus was that by and large most treatment centres are catering to their own catchment areas, in the vicinity. Moreover, almost uniform number of clients have been found to seek treatment at almost all the centres surveyed in this study. Finally, the proportion of respondents reporting under the treatment seeking ‘ever’ and ‘anywhere’ categories was uniformly low.

More caution however, is required while projecting the data from the surveyed sites to draw conclusions for the entire state(s). As discussed earlier as well, districts where survey was conducted had considerable variety among them in terms of size and location within the state. Thus, no single district could be termed as representative of the entire state. Hence we have estimated the size of the IDU population for the three states on the basis of both – the lowest as well as the highest prevalence of IDUs among male population.

Conclusion & Recommendations

- This study demonstrates that it is feasible to conduct a methodologically robust size estimation study using minimum of resources and time. There are definite indications that IDUs may be much more in number in many parts of the country, than previously considered. More robust size estimation exercises for IDUs are urgently required in Jammu and Kashmir, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Orissa, parts of Maharashtra and Kerala. These are the states where methodologically sound size estimation studies could potentially revise the estimates held until now. Additionally, only a handful of organisations have conducted robust size-estimation studies in the country; those having experience to conduct methodologies such as respondent driven sampling are even fewer. Since, the technical expertise for conducting such exercises is limited in the country at this moment; there is a need to develop pool of experts at the national level.
- Most IDUs in Punjab and Haryana are young adult males, many of whom are married and sexually active. Any HIV prevention intervention planned for IDUs must address issues related to sexual transmission of HIV as well. In this context, it will be very important to reach out to the regular sexual partners (i.e. wives) of IDUs. The experience from Manipur and Nagaland has shown us that once the HIV sero-prevalence reaches a critical level among IDUs, it could potentially affect their sexual partners resulting ultimately leading to a generalised epidemic (Panda et al, 2000).
- The available treatment services are being poorly utilised and apparently are not attracting a significant number of drug users – both IDUs and non-IDUs alike. Programmes to enhance the utilisation of services are urgently required. There is also evidence that the peer led approaches have a lot of potential to reach out to drug users and bring them closer to various services. Hence, such interventions should be extended. In fact, as a matter of routine, outreach services using recovering drug users as peer educators, should be provided by all drug-dependence treatment centres.
- Intervention and surveillance programmes are urgently needed in Punjab and Haryana for IDUs; and are required at a much larger scale than hitherto planned. There is a need to rapidly enhance the number of sentinel surveillance sites across both the states. Similarly, number of targeted interventions for IDUs must be enhanced. Oral substitution treatment using opioid agonists which is a very important intervention and which appears to be non-existent in Punjab and Haryana at the moment is urgently required.

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The Joint United Nations Programme on HIV/AIDS (UNAIDS) brings together ten UN agencies in a common effort to fight the epidemic: the Office of the United Nations High Commissioner for Refugees (UNHCR), the United Nations Children's Fund (UNICEF), the World Food Programme (WFP), the United Nations Development Programme (UNDP), the United Nations Population Fund (UNFPA), the United Nations Office on Drugs and Crime (UNODC), the International Labour Organization (ILO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Health Organization (WHO), and the World Bank.

UNAIDS, as a cosponsored programme, unites the responses to the epidemic of its ten cosponsoring organizations and supplements these efforts with special initiatives. Its purpose is to lead and assist an expansion of the international response to HIV/AIDS on all fronts. UNAIDS works with a broad range of partners – governmental and nongovernmental, business, scientific and lay – to share knowledge, skills and best practices across boundaries.

