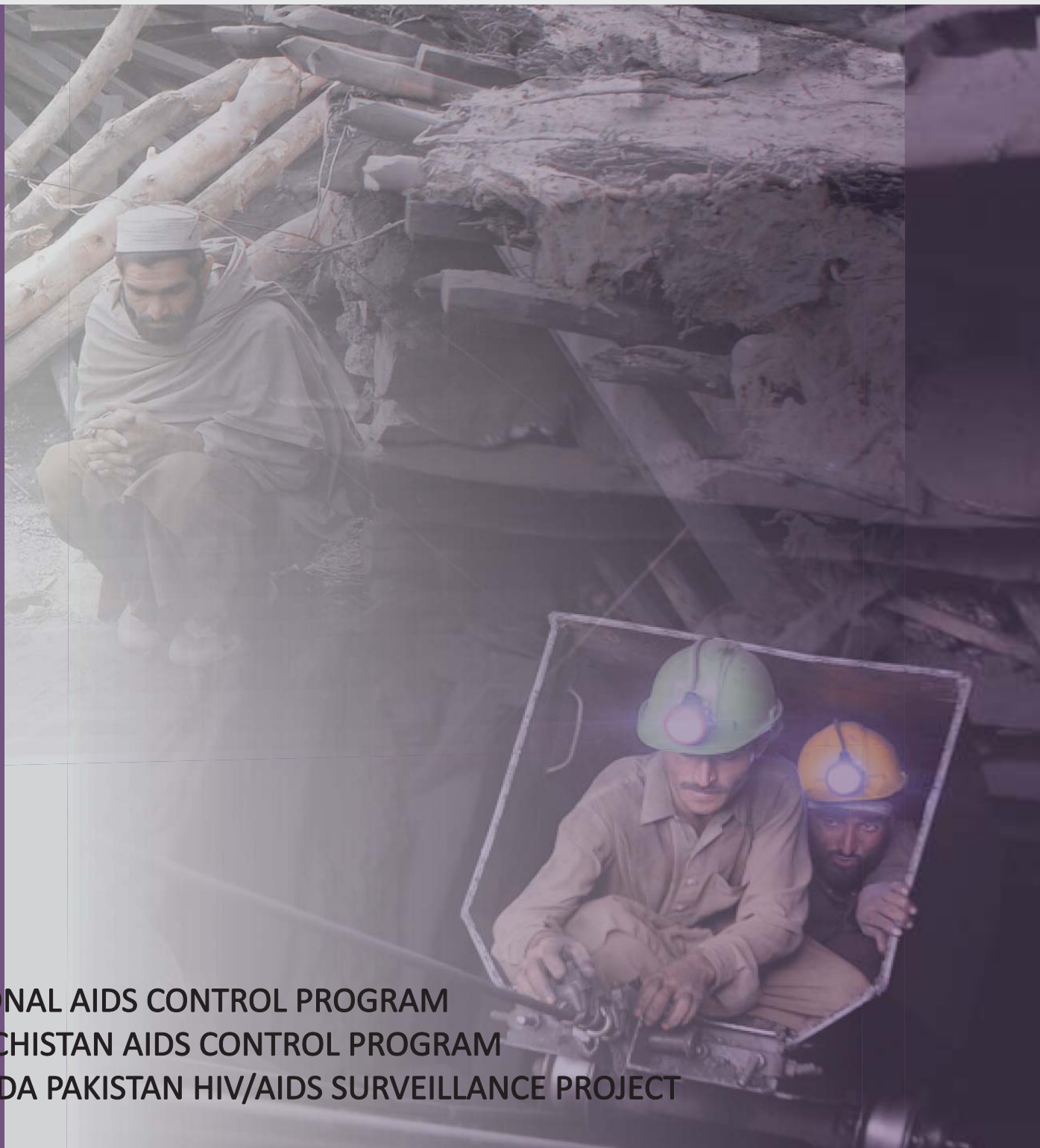


# HIV SECOND GENERATION SURVEILLANCE IN PAKISTAN

## Bio Behavioral Survey among Mine workers in Balochistan, Pakistan January 2012



NATIONAL AIDS CONTROL PROGRAM  
BALOCHISTAN AIDS CONTROL PROGRAM  
CANADA PAKISTAN HIV/AIDS SURVEILLANCE PROJECT

---

© National AIDS Control Program, Pakistan 2011.

All rights reserved. This publication can be obtained from the National AIDS Control Program. Requests for permission to reproduce or translate this report whether for sale or for noncommercial distribution should also be addressed to the address below, or by fax or e-mail

National AIDS Control Program  
AIDS Block, National Institute of Health  
Chak Shehzad, Park Road  
Islamabad, 45500. Pakistan.

Provincial AIDS Control Program, Balochistan  
PHDC Building  
Near Fatima Jinnah General & TB Hospital  
Western By-Pass  
Quetta.

# TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
LIST OF FIGURES .....	ii
LIST OF TABLES .....	ii
ABBREVIATIONS AND ACRONYMS .....	iii
ACKNOWLEDGMENTS .....	iv
FOREWORD .....	v
EXECUTIVE SUMMARY .....	vi
1 INTRODUCTION .....	1
1.1 Introduction and background .....	1
1.2 HIV in Pakistan .....	1
1.3 HIV in Balochistan .....	1
1.4 Mobility, mining and HIV/AIDS .....	1
1.5 Mine workers: a population at potential risk in Pakistan? .....	1
1.6 HIV/AIDS Surveillance Project .....	2
2. METHODOLOGY .....	3
2.1 Study design, setting and population .....	3
2.2 Case definitions .....	3
2.3 Sample size .....	3
2.4 Sampling technique .....	4
2.5 Data collection instrument .....	4
2.6 Training on data collection .....	4
2.7 Data collection and field work .....	4
2.7.1 Stakeholder Sensitization .....	4
2.7.2 Organization of field teams .....	5
2.7.3 Interview procedure .....	6
2.7.4 Informed consent .....	6
2.7.5 Debriefing .....	6
2.8 Sample collection and management .....	6
2.9 Quality assurance .....	6
2.10 Ethical review .....	7
2.11 Data management .....	7
3. RESULTS: HIV and HIV Risk among Mine Workers in Balochistan .....	9
3.1 Mining sites .....	9
3.2 Socio-demographic characteristics .....	9
3.3 Sexual behavior among mine workers .....	12
3.4 Drug use among mine workers .....	13
3.5 Knowledge of HIV, AIDS and STIs .....	13
3.6 HIV infection among mine workers.....	15
4. CONCLUSIONS .....	17
REFERENCES .....	18



## ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CDCU	Central Data Coordination Unit
DBS	Dried Blood Specimen
FSW	Female Sex Worker
HASP	HIV/AIDS Surveillance Project
HIV	Human Immunodeficiency Virus
HRA	High Risk Activity
HSW	Hijra Sex Worker
IDU	Injecting Drug User
MSW	Male Sex Worker
NACP	National AIDS Control Program
NGO	Non-governmental Organization
PACP	Provincial AIDS Control Program
PDCU	Provincial Data Coordination Unit
PKR	Pakistani Rupee
STI	Sexually Transmitted Infection
TAG	Technical Advisory group
UC	Union Council
VCT	Voluntary Counseling and Testing



## FOREWORD

The unique nature of spread of HIV infection, being dependent upon the behaviors of key populations, has made it quite different from other infectious diseases. As part of Balochistan's surveillance system for HIV & AIDS, this important study aims to identify and understand the risk behaviors of Mine workers, a key migrant population in Balochistan, with respect to transmission of HIV.

Balochistan has already shifted from a state of low prevalence to a concentrated epidemic among Injecting Drug Users, as has been revealed by the latest Round of HIV Surveillance conducted by HASP. The Provincial AIDS Control Program, Balochistan intends to scale up preventive activities among key and bridging populations. This also includes provision of services to those who unfortunately have already acquired HIV infection.

I deeply appreciate the efforts of all those who participated in this survey, the field teams, Socio- Pakistan and SOCH for their sincere dedication and hard work. I would really like to acknowledge the efforts and commitment of Dr. Chaker Riaz Baloch Surveillance Coordinator HASP and PDCU team led by Mr. Alamzaib Khan.

Dr. Simon Azariah, Country Director HASP and his national team deserve special mention for all their efforts to come up with this useful report. I also appreciate the guidance and support provided by Ms. Michelle Munro Canadian Project Director and Canadian Technical Team.

I would also like to appreciate the support of CIDA, as without their contribution this study would have not been possible.

**Dr. Nasir Khan**  
Program Manager  
Provincial AIDS Control Program Balochistan

## EXECUTIVE SUMMARY

This report provides biological and behavioral information on HIV among mine workers in Balochistan from a survey conducted in September 2011 in the mining areas of Muslim Bagh, Sorange and Mach.

The purpose of the study was to collect, analyze and disseminate accurate information on the prevalence of key risk behaviors and of HIV among mine workers in order to deliver sustained and effective HIV prevention, treatment care and support services. A cross-sectional behavioral and biological survey was conducted among this group. Data were gathered from mine workers using a structured questionnaire. Informed consent was obtained prior to conducting interviews. Biological data was gathered using the capillary “Dried Blood Specimen” (DBS) methodology, chosen for its ease of collection, storage, shipping, and serological accuracy. The interviewers were trained in HIV, interview techniques, dried blood spot collection and infection control processes. A debriefing session was held with the participants on completion of the questionnaire and drawing of a biological sample, to answer any queries. Information on HIV prevention and available services including voluntary counseling and testing (VCT) was provided.

A total of 1200 interviews were conducted in three mining sites. Survey results indicated that the average age of mine workers was 28.7 years  $\pm$  9.3. Of those surveyed, 59% were illiterate, 52% were married and the median monthly income was reported to be PKR 10,000 per month (mean = 10,224  $\pm$  2950 PKR). 33% of mine workers are Bailcha men who gather the coal in containers deep in the mines and another 33% reported that their role was that of a buddy (33%), carrying the containers out from mines manually. 85% of miners were working on a monthly contract basis with the company, and had been working in mines for 1 to 5 years (61.3%). The average duration of work in the current location was highest in Sorange 47.9 $\pm$ 38.2 and lowest in Mach 5.1 $\pm$ 3.2 months, likely due to the poorer security situation in that area.

Almost all 90% of mine workers had had sexual intercourse. The mean age of first sexual intercourse was 17.8 $\pm$ 2.7. Approximately 55% of mine workers reported having a regular female sex partner. The mean number of regular sex partner in past one year was 4.2 $\pm$ 2.8. The mean number of paid female partners in the past years was 7.5 $\pm$ 4.1 and paid male/hijra sex workers, 6.1 $\pm$ 3.4.

Condom use was very low. Only 2% of mine workers reported that they always (consistently) used a condom with a regular partner, 3.1% with a paid female partner and 4% with male/hijra sex worker. When asked about their last sexual encounter, 42% of mine workers reported their last partner as being a male while for 58% said their last partner was a female. 21% percent had their last sex with a MSW, 13.4% with an unpaid male, 3.7% with a male colleague, 3.8% with a HSW, and 35.5% with FSW (35.5%). Mine workers reported that their last sexual encounter was most often arranged by themselves (59%) or through co-workers (29%). Condom use was low at 13% when last sex was with male/hijra/MSW, and 15% with FSWs. A little over 49% had used lubricant in their last sex with MSW/HSW/male partners.

77% of mine workers used drugs for non therapeutic purpose. Charas and cigarette use was common, while a very low number used any other types of drugs i.e. opium (2%), bhang (9.4%), heroin (1.4%) and alcohol (5%). Further analysis showed that very few injected drugs and only in Muslim Bhag (1.5%).



## EXECUTIVE SUMMARY

Regarding knowledge of HIV, AIDS and STIs, 70.5% had heard of HIV and/or AIDS and 79.3% were aware of STIs. More than half reported having experienced burning or itching when passing urine in the previous six months and 37% reported **pus or an abnormal discharge**. Of those with symptoms, 28% had sought treatment from hospital, 19% from a dispensary, and 27% from Hakim/ homeopathic.

None of the mine workers tested were found to be sero-positive for HIV.

The results indicate an urgent need for information and services to prevent HIV and other STIs among mine workers.

## 1.1 Introduction and background

HIV/AIDS has had an enormous impact on the global economy and changed the demographic characteristics of many countries. UNAIDS estimates that at the end of 2010, 34 million people were living with HIV globally, and there were 2.7 million new HIV infections in 2010. Approximately 1.8 million died from AIDS-related illnesses<sup>1</sup>.

## 1.2 HIV in Pakistan

With an estimated prevalence rate of less than 0.1%, Pakistan continues to have a low level epidemic among general population; however, recent surveillance results indicate that the epidemic is beginning to progress among key populations at higher risk of infection. As in several other Asian countries, the HIV epidemic in Pakistan is characterized by high initial prevalence among injecting drug users (IDUs), with the potential to expand into other key populations including men who have sex with men (MSM) and male, female and transgender hijra sex workers (HSWs). The 2011 surveillance data from Pakistan is reporting sero prevalence of over 40% among IDUs in some cities. In addition to IDUs, trends are suggestive that HIV is beginning to become established in other key populations as well and substantial levels of infections are now reported among HSWs and MSWs in several cities. The infection rate among FSWs is not at these levels, but behavioral data suggest that the potential for the epidemic to spread among this group is much higher.

## 1.3 HIV in Balochistan

By August 2010, 374 HIV infections had been reported to the Provincial AIDS Control Program Balochistan. Surveillance conducted in 2011 by HASP found HIV infection among 22% of IDUs surveyed in Turbat and 7% in Quetta<sup>2</sup>. Other key populations at higher risk for HIV are present in moderate numbers and previous surveillance data shows that they interact with IDUs significantly<sup>3</sup>.

## 1.4 Mobility, mining and HIV/AIDS

There is ample evidence to demonstrate a close association between increased vulnerability during mobility and the spread of HIV<sup>4</sup>. In Bangladesh, for nearly 67% of the people living with HIV, migration was the main factor that led to their HIV-vulnerability<sup>5</sup>. Factors linking population mobility and increased vulnerability to HIV include poverty, lack of legal protection, discrimination and exploitation.

Studies among mine workers in various countries have identified the factors which influence engagement in unsafe sexual practices<sup>6</sup>. The findings reveal that sex carries a number of social meanings in the lives of migrant miners: sex is relaxation and reward for their risk and hard work; access to sex is an incentive for miners to continue working in the mine; sex strengthens identity and social networks; and sex helps miners to affirm their manhood and miner group membership. Facing accidents at work on a daily basis, miners are also less inclined to worry about the long-term risks of HIV infection. In addition, being excluded from access to relevant information, miners feel distant from HIV infection.

## 1.5 Mine workers: a population at potential risk in Pakistan?

Mine workers are an important figure among the "people on move" in Pakistan. The majority of people employed by the mining sector are males aged between 18-49 years, who are in the prime of their sexual and reproductive lives. A large proportion of mine workers are internal migrants who have sought employment in the mines as a means to support their families who usually remain in the village far away from them<sup>7</sup>.

Balochistan province is home to a very large mining community. Recent data suggests that many of these miners indulge in sex with each other and have a very high proportion of sexually transmitted infections<sup>8</sup>. Considering the situation it was felt that there was a need to assess the HIV risk situation among mine workers in Balochistan in a scientific manner to further

---

develop prevention strategies and programs for this vulnerable segment of population.

## 1.6 HIV/AIDS Surveillance Project

Launched in 2004, the HIV/AIDS Surveillance Project (HASP) supported the establishment of an SGS system for HIV under the National AIDS Control Program's (NACP's) capacity building and program management component. The project is implemented by a consortium consisting of Agriteam Canada Consulting Ltd, University of Manitoba and Pro Action: Partners for Community Health, Inc. Additional technical advice is provided by the Public Health Agency of Canada. The Pakistani partners consist of the NACP, and Provincial AIDS Control Programs (PACPs) in Punjab, Sindh, Khyber Pukhtunkhwa (KPK) and Balochistan, the former Ministry of Health, the National Institutes of Health, and contracted non-governmental and research organizations as well as laboratories. The project has been instrumental in establishing key aspects of a national HIV surveillance system in Pakistan.

## 2.1 Study design, setting and population

A cross-sectional survey design was conducted, with all data collected during September 2011 in three mining sites of Balochistan, geographically the largest province of Pakistan. In consultation with the Ministry of Mines and Minerals and the Provincial AIDS Control Program the following sites were selected for the Bio Behavioral survey:

1. Mach for Coal Mine Workers
2. Sorange for Coal Mine Workers
3. Muslim Bagh for Chromite Mine Workers

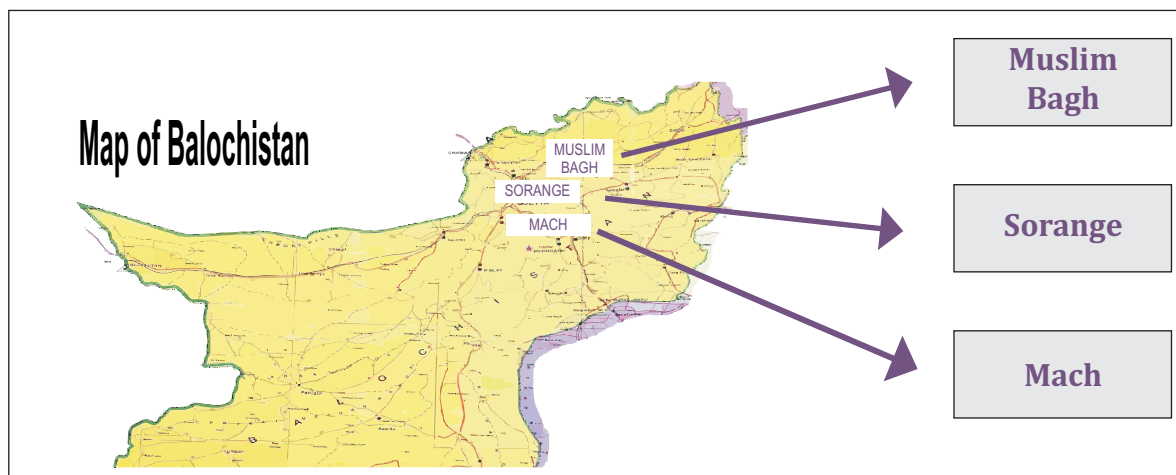
## 2.2 Case definitions

**A male mine worker, aged 18 years and above, working in coal or chromite mines at the selected sites and willing to participate in the study.**

## 2.3 Sample size

Sample size for the study was calculated using the following formula and assumptions:

$$n = \frac{Z^2_{1-\alpha/2} P(1-P) N}{d^2(N-1) + Z^2_{1-\alpha/2} P(1-P)}$$



Site selection was based on security reasons, concentration of laborers and geographical accessibility of the area.

The study populations were coal and chromite mine laborers, working in selected study sites.

$P$  = estimated prevalence at baseline was set at 5  
 $P$  = estimated prevalence at baseline was set at 50% to achieve the highest sample size.  
 $d$  = expected prevalence in future (detect a change of  $\pm 3\%$ )  
 $Z_{1-\alpha}$  = 95% level of significance  
 $N$  = Population size (70,000)

Study populations by site and dates of data collection

Study site	Study population	Sample size	Date of data collection
Sorange	Coal mine worker	191	9-16 September 2011
Mach	Coal mine worker	153	9-16 September 2011
Muslim Bagh	Chromite mine workers	856	17-29 September 2011

Keeping HIV prevalence at 50% with a 95% confident interval and bound of error at 3%, the sample size came out to be 1049. With 10% non-response the final sample size is 1200 miners in selected mines of Balochistan.

## 2.4 Sampling technique

A pre-surveillance activity was to obtain a list of all mines and their workers from the Ministry of Mining and Minerals and mine companies. Using this data, simple random sampling method was used to recruit study subjects. Using a random table, the required number of subjects was selected. All selected miners were invited to participate in the study. On refusal or non-availability of the subject the next miner on the list was invited to participate.

## 2.5 Data collection instrument

A structured questionnaire was developed in English which was translated into the local language. The questionnaire was translated back to English to check for translation errors. The questionnaire was pretested to check for validity and phrasing of the questions. Pretesting was done on miners in areas other than the selected sites. Based on the results of the pretest, necessary amendments were made in the questionnaire.

The pretested questionnaire gathered information on the following key variables:

- Socio demographic characteristics
- Migratory or travel experience
- Occupational history
- Sexual behavior with regular partner including females and males
- Sexual behavior with paid partners including females, males and hijras / transgender
- Availability and use of condoms
- Knowledge of HIV/AIDS
- Knowledge and treatment of STIs
- HIV testing
- Use of drugs including injecting drug use
- Health seeking behavior

## 2.6 Training on data collection

Field teams were trained on various aspects of field work in a 3 day training workshop. Interviewers were trained with great care. The training was focused on providing information on issues like:

- Understanding HIV and AIDS: facts and myths
- Basic interviewing skills
- Sex, gender, sexual orientation and HIV / AIDS
- Stigma and discrimination
- Field work
  - subject selection and recruitment process
  - explaining the rationale and objectives of the study to the subjects
  - ethical issues including confidentiality
  - acquiring the informed consent and a thorough understanding regarding each question
  - obtaining biological samples and about universal precautions
  - debriefing and referral process
  - coding and editing
  - data management
  - bio hazard waste management

Participants included NGO research staff and field teams.

The training team comprised of:

- HASP technical team
- National and Provincial AIDS Control Program staff

## 2.7 Data collection and field work

### 2.7.1 Stakeholder sensitization

Before the study could commence a number of activities were needed to secure the support of key stakeholders. These included:

- Sensitizing key government ministries and departments e.g. Mines and Minerals Ministry, Local District Management and Police Department in the target city through meetings.
- Obtaining authorization for field support from the Provincial AIDS Control Program.

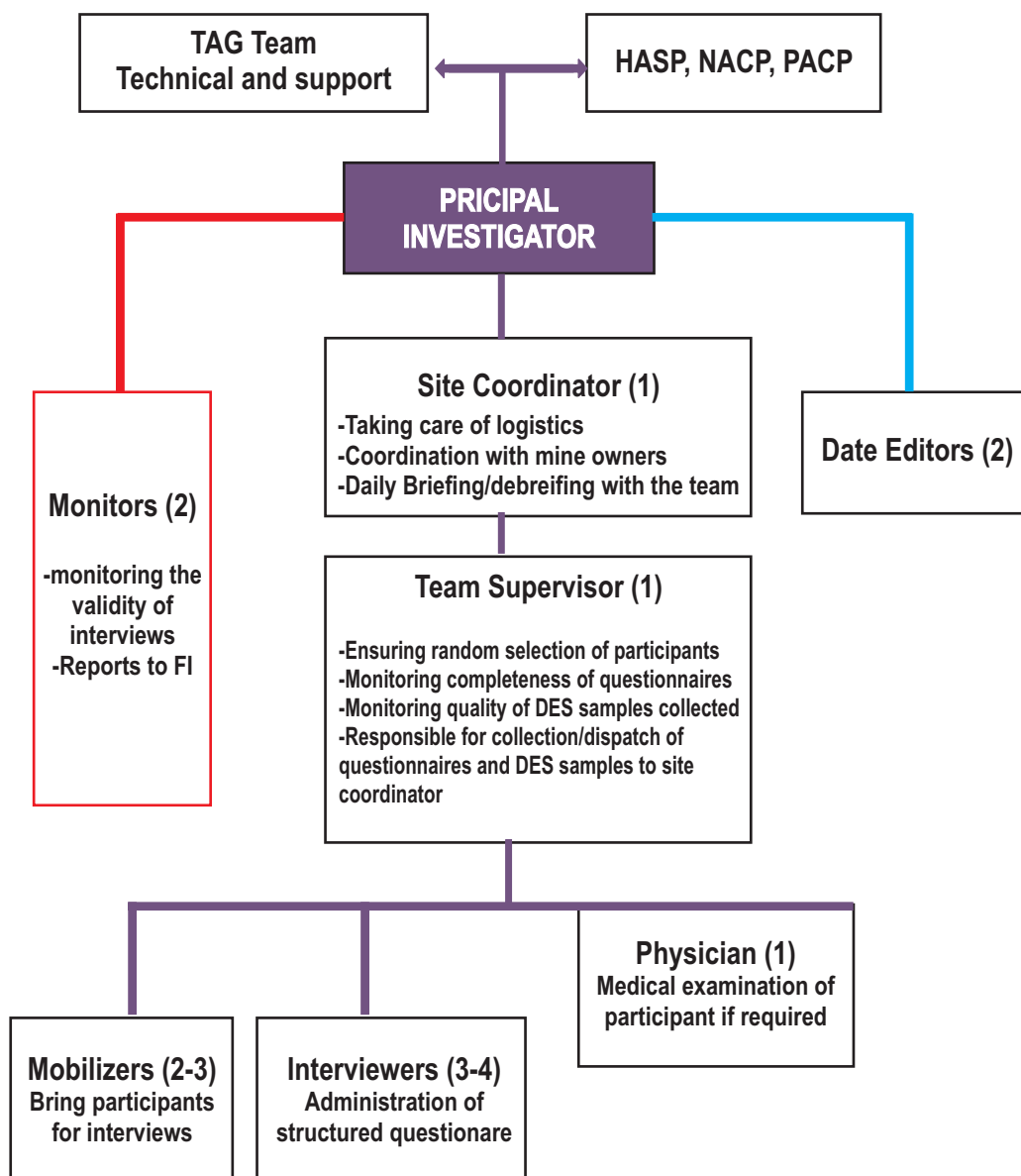
- Holding meetings with the labor union of coal and chromite mine workers to seek their help during field work to access mine laborers and develop operational plans.

### 2.7.2 Organization of field teams

All aspects of the study were managed by a technical team comprised of epidemiologists and public health experts from the National/Provincial AIDS Control Programs and HIV/AIDS Surveillance Project.

An NGO was selected through a competitive process. The selected NGO was responsible for the entire data collection process of the Bio Behavioral survey. A Team Supervisor worked under the supervision of a Site Coordinator to ensure that the data collection procedure adhered to the protocol. The Team Supervisor worked with a field team comprising of 4 Interviewers, as well as two to three Mobilizers. The Mobilizers were selected from among the mine workers and assisted the field team to access the selected study subjects. A Data Editor was responsible for editing of all the questionnaires

## Operational Workflow



A field office was established at each mining site where interviews were conducted to ensure confidentiality.





provided regular feedback. At the end of every day, the Team Supervisor ensured eligibility, completeness and consistency of the completed questionnaires. The completed questionnaire was sent to the PDCU for data entry.

HASP, PACP and the Field Monitor monitored field activities to ensure the quality of the data collected. This team visited the field offices in the mining sites randomly, confirmed the sampling methodology and verified at least 10% of the questionnaires. The questionnaires were discarded if gross errors were observed.

## 2.10 Ethical review

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

- *Informed consent and voluntary participation* – Recruitment of participants was conducted only after describing the study procedures and obtaining informed consent. During the process of obtaining informed consent, prospective participants were clearly informed that participation was voluntary and that non-participation would have no negative consequences in terms of access to programs or services. Monetary compensation was provided to participants for their time, commitment and inconvenience due to participation.
- *Confidentiality* – Considerable effort was taken to maintain the confidentiality of participants. This included non-disclosure of participants' identity and the use of a non-identifying coding system to track and link study data. The electronic data was password protected and only authorized officials of PACP/HASP had access to the data files.
- *HIV test results* – HIV test results were kept confidential from study personnel and were not provided to participants. Instead, participants were advised that if they wanted to know their HIV status, the study personnel would facilitate this access through an

official HIV counseling and testing service.

## 2.11 Data management

The data was sent to a Provincial Data Coordination Unit (PDCU) in Quetta for all data management, including entry, quality monitoring and security. The PDCU was under the supervision of a Central Data Coordination Unit (CDCU) Islamabad. The data was entered using software developed for study. Data entry operators were hired and trained for the study and were based at the unit.

Specific procedures were used to ensure the integrity of the data entered. These include preparation of a coding manual for the data, verification of coding and data input, range checks on the values of all variables, and consistency edits for responses to questions.

- The procedure for data transfer and storage was: The Site Coordinator was responsible for the transfer of completed and edited questionnaires to the PDCU for centralized data entry and storage.
- The data was entered and stored at the PDCU.
- All entered data was sent to CDCU for final validation processing and analysis.
- Laboratory results was sent directly to the CDCU and linked to the corresponding interview data.
- The questionnaires and laboratory results were distinguished by an encrypted unique identifier and unique study site code; no personal information was accompanied these records.



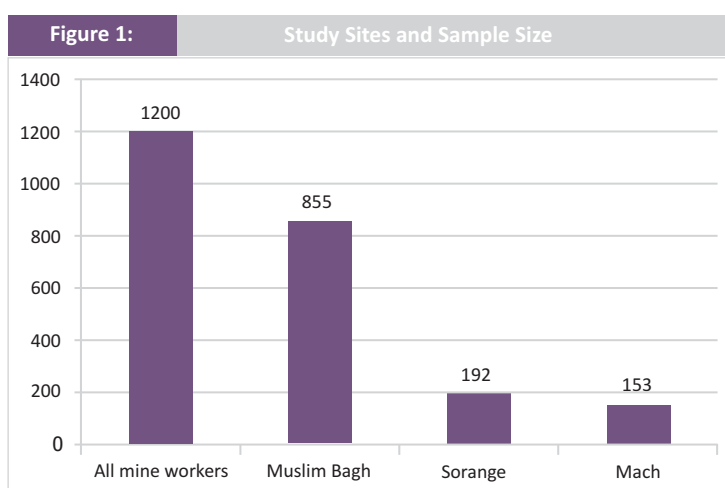
## 3 RESULTS

### 3.1 Mining sites

This survey was conducted in three mining sites i.e Muslim Bagh, Sorange and Mach of Balochistan province during September 2011. Most respondents were from Muslim Bagh, a considerably larger mine.

### 3.2 Socio-demographic characteristics

A total of 1200 mine workers were interviewed in the 3 mining sites. This section describes the key socio-demographic characteristics of surveyed mine workers.

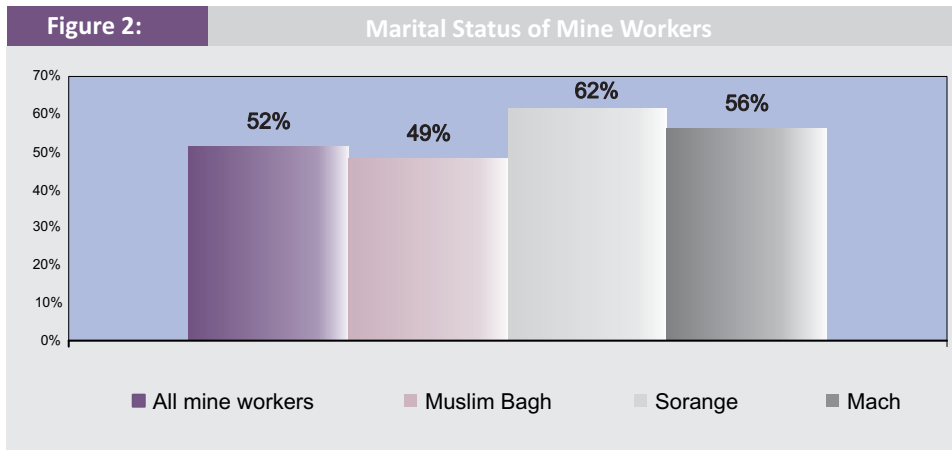


**Table 1: Socio- Demographic Characteristics**

Characteristics	All Miners (n=1,200)	Study Sites		
		Muslim Bagh (n=855)	Sorange (n=192)	Mach (n=153)
<b>Current age</b>				
< 20 years	14.3%(172)	14.9%(127)	16.1%(31)	9.2%(14)
20-24 years	22.5%(270)	22.5%(192)	21.4%(41)	24.2%(37)
25-29 years	24.8%(298)	27.0%(231)	17.7%(34)	21.6%(33)
30-34 years	15.3%(183)	15.6%(133)	14.6%(28)	14.4%(22)
35-39 years	23.1%(277)	20.1%(172)	30.2%(58)	30.7%(47)
Mean age (SD)	27.9±8.6	27.9±8.6	30.5±11.2	30.1±9.9
<b>Year of formal education</b>				
Illiterate	58.8%(704)	63.7%(544)	49.0%(94)	43.4%(66)
Quranic education	3.2%(38)	3.6%(31)	3.1%(6)	0.7%(1)
Up to 5 years	13.3%(159)	14.5%(124)	10.9%(21)	9.2%(14)
Matric & Above	24.8%(297)	18.1%(155)	37.0%(71)	46.7%(71)
<b>Living arrangement ( Living with)</b>				
Alone	1.0%(12)	0.6%(5)	2.6%(5)	1.3%(2)
Family/relatives	18.3%(219)	7.3%(62)	55.2%(106)	33.3%(51)
With friends	8.0%(96)	9.1%(78)	6.8%(13)	3.3%(5)
Other mine workers	72.7%(872)	83.0%(709)	35.4%(68)	62.1%(95)
<b>Income (PKR)</b>				
Mean Income (Mean±SD)	10,224±2,950	9,352±1713	11,821±2,957	13,315±5,089
Median income /month*	10,000	9,000	12,000	15,000

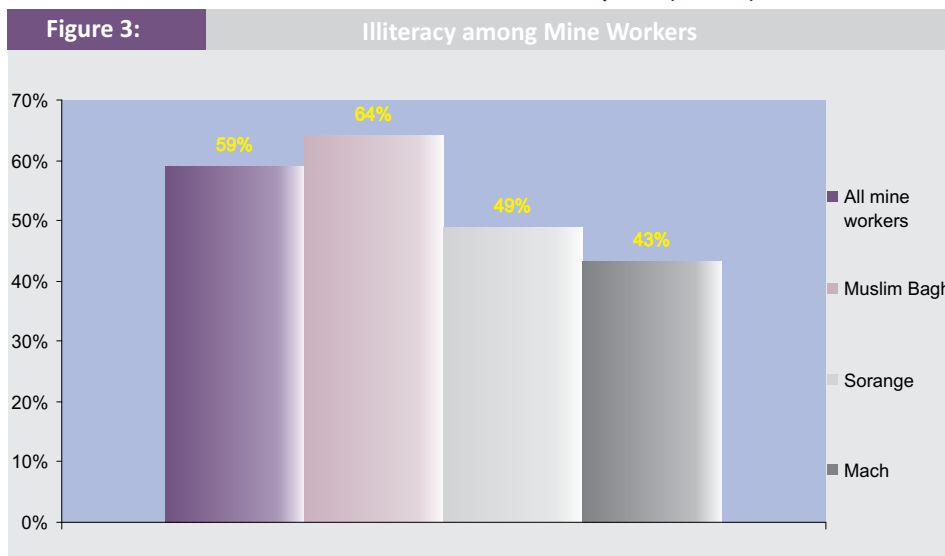
All mine workers (1200) interviewed were males. The mean age of mine workers was 28.7 years  $\pm$  9.3. The highest proportion (25%) of mine workers was between 25 to 29 years of age with almost half, 47.3% of the mine workers, between 20 to 29 years of age.

It was observed that the mining companies have not introduced modern methods or technology. The study found that 33% of mine workers are Bailcha man who gather the coal in containers deep in the mines and another 33% reported that their role was that of a buddy



Approximately 52% of the mine workers surveyed was currently married. The highest proportion of married miners was seen in Sorange (62%), followed by Mach (56%).

(33%), carrying the containers out from mines manually. Approximately (85%) miners were working on a monthly contract basis with the company and had been working for 1 to 5 years (61.3%) at the time of the survey. The



It has been noted that 59% of mine workers were illiterate. The highest proportion of illiteracy (64%) was reported in Muslim Bagh, followed by Sorange (49%) The majority (73%) of them lived with colleagues in the mining area.

average duration of work in the current location was highest in Sorange 47.9  $\pm$ 38.2 and lowest in Mach 5.1  $\pm$ 3.2 months, likely due to the poorer security situation in that area.

The median monthly income was PKR 10,000 per month (mean = 10,224  $\pm$  2950 PKR).

Approximately 73.3% of mine workers visit the main city once in a week

<b>Table 2:</b>		<b>Occupation Related Information</b>		
<b>Characteristics</b>	<b>All Miners (n=1,200)</b>	<b>Study Sites</b>		
		<b>Muslim Bagh (n=855)</b>	<b>Sorange (n=192)</b>	<b>Mach (n=153)</b>
<b>Type of work</b>				
Coal cutter	13.4%(160)	12.4%(105)	15.3%(29)	17.3%(26)
Bailcha man	33.0%(393)	36.0%(306)	26.3%(50)	24.7%(37)
Buddy	32.8%(390)	33.9%(288)	37.4%(71)	20.7%(31)
Mine supervisor (Munshi)	4.5%(54)	5.2%(44)	1.6%(3)	4.7%(7)
<b>Type of contract</b>				
Daily wages	4.7%(56)	3.3%(28)	14.6%(28)	0
Monthly payment	85.1%(1021)	96.0%(821)	59.9%(115)	55.6%(85)
On amount of coal extracted	10.3%(123)	0.7%(6)	25.5%(49)	44.4%(68)
<b>Working as a Mine worker</b>				
< 1 year	0	0	0	0
1-5 years	61.3%(667)	66.6%(508)	37.3%(69)	64.3%(90)
6-10 years	26.3%(286)	26.0%(198)	27.6%(51)	26.4%(37)
> 10 years	12.4%(135)	7.5%(57)	35.1%(65)	9.3%(13)
<b>Duration of work in this location</b>				
	24.8±38.2	22.6±26.7	47.9±38.2	5.1±3.2
<b>How often do you go to the main city</b>				
Once in a week	73.3%(878)	76.0%(648)	70.8%(136)	61.4%(94)
Twice in a week	9.8%(118)	11.0%(94)	8.3%(16)	5.2%(8)
Once in a month	11.7%(140)	12.0%(102)	19.3%(37)	0.7%(1)
<b>Main recreation opportunities available</b>				
Mini cinema	8.1%(97)	9.2%(78)	8.4%(16)	2.0%(3)
Indoor games	57.7%(688)	57.4%(489)	46.6%(89)	73.3%(110)
Outdoor games	34.2%(408)	33.5%(285)	45.0%(86)	24.7%(37)

Out of 1200 mine workers interviewed, 70% had left their home for the first time. On an average, mine workers started working at the age of 17.9±3.1 years. Only 10.5% had a chance to work abroad in last five.

<b>Table 3:</b>		<b>Migration and Travel</b>		
<b>Characteristics</b>	<b>All Miners (n=1,200)</b>	<b>Study Sites</b>		
		<b>Muslim Bagh (n=855 )</b>	<b>Sorange (n=192)</b>	<b>Mach (n=153)</b>
Left home for work for the first time	70.1%(840)	76.9%(657)	75.9%(145)	24.8%(38)
Mean age you left your home for work	17.9±3.1	17.9±2.9	17.7±3.8	18.6±2.9
How long do you stay away from your home (Mean±SD)	7.0±9.1	6.7±7.9	11.8±17.2	4.7±2.9
How many times do you went for work (Mean±SD)	5.0±3.8	4.9±3.6	4.1±2.9	6.3±4.8
Went aboard for work(in last 5 years)	10.5%(126)	13.8%(118)	2.6%(5)	2.0%(3)

### 3.3 Sexual behavior among mine workers

The HIV epidemic among key populations at higher risk of HIV in Pakistan is well established. Given the potential for of sexual networking among key populations, bridging populations and the general population, we examined sexual behaviors and practices to assess the potential for an epidemic in mine workers.

Approximately 89.4% mine workers had experience of sexual intercourse and this number was highest in Muslim Bagh (92%). Mean age of first sexual intercourse was 17.8±2.7. Approximately 55% of mine workers reported having a regular female sex partner. The mean number of regular sex partner in past one year was 4.2±2.8. The mean number of paid female partners in the past years was 7.5±4.1 and paid male/hijra sex workers, 6.1±3.4.

Despite these high reported numbers of regular and paid sexual partners, condoms were reported as being used only a third of the time with any partner and consistent condom was very low. Only 1.7% of mine workers reported that they always (consistently) used a condom with a regular partner, 3.1% with a paid female partner and 3.7% with male/hijra sex worker.

Mine workers were asked to identify the type of partner with whom they had their last sexual encounter; 42% reported their last partner as being a male, while for 58% their last partner was a female. 21% percent had their last sex with a MSW, 13.4% with an unpaid male, 3.7% with a male colleague, 3.8% with a HSW, and 35.5% with FSW (35.5%), all high risk activity. Of the 23% whose last sex has been with an unpaid female, there is also the possibility of high risk sex. A little over half of the time, the location of the last sexual activity was the mine colony with 31% in the nearest main city and 17.2% in the actual mine. Mine workers reported that their last

Table 4:

Sexual Behavior

Characteristics	All Miners (n=1,200)	Study Sites		
		Muslim Bagh (n=855)	Sorange (n=192)	Mach (n=153)
Ever had sexual intercourse experience	89.4%(1073)	92.2%(788)	87.5% (168)	76.5%(117)
Age of first sexual intercourse (mean ± S.D)	17.8±2.7	17.8±2.4	17.9±3.3	17.8±4.0
<b>Regular female sex partner</b>				
Sexually active with regular female sex partner (mean ± S.D)	54.8% (586)	52.2% (410)	49.7% (83)	78.8% (93)
Mean number of regular sex partners in past one year	4.2±2.8	3.9±2.6	4.6±3.1	5.2±3.3
<b>Condom use pattern</b>				
▪ Always	1.7%(10)	2.0%(8)	1.2%(1)	1.1%(1)
▪ Sometimes	30.1%(175)	29.0%(118)	20.5%(17)	44.0%(40)
▪ Never	68.2%(396)	69.0%(281)	78.3%(65)	54.9%(50)
<b>Ever had sex with female sex worker (FSW)</b>				
Mean number of paid female partners (mean ± S .D)	7.5±4.1	7.4±3.4	7.2±5.2	9.2±5.9
<b>Condom use pattern</b>				
▪ Always	3.1%(25)	3.0%(18)	4.8%(6)	1.3%(1)
▪ Sometimes	29.9%(239)	27.9%(166)	23.0%(29)	56.4%(44)
▪ Never	66.9%(534)	69.0%(410)	72.2%(91)	42.3%(33)
<b>Ever had sex with a MSW or HSW or Boy</b>				
Mean number of paid male/hijras partners (mean ± S.D)	6.1±3.4	6.0±3.2	6.9±4.7	5.4±2.9
Consistent Condom used in last sex with MSW or HSW	3.7%(22)	3.4%(17)	5.6%(4)	4.5%(1)

sexual encounter was most often arranged by themselves (59%) or through referral by co-workers (29%). Only 11.9% reported using a pimp to arrange their last sex. Condom use was low at 13% when last sex was with male/hijra/MSW, and 15% with FSWs. A little over 49% had used lubricant in their last sex with MSW/HSW/male partners.

### 3.4 Drug use among mine workers

The results show that 77% of mine workers used drugs for non therapeutic purpose. We queried them about

the types of drugs used in the past month in 3 study sites. It was interesting to note that all mines showed a situation in which charas and cigarette use was common, while a very low number used any other types of drugs i.e. opium (2%), bhang(9.4%), heroin (1.4%) and alcohol (5%). Further analysis showed that very few are injected drugs, found only in Muslim Bhag (1.5%).

### 3.5 Knowledge of HIV, AIDS and STIs

Mine workers were asked about HIV, AIDS and STIs.

**Table 5: Last Sexual Encounter with Paid and Unpaid Partners**

Characteristics	All Miners (n=1,200)	Study Sites		
		Muslim Bhag (n=855)	Sorange (n=192)	Mach (n=153)
<b>Last Sexual encounter with male/hijras</b>				
Fellow mine workers	3.7%(39)	2.8%(22)	3.7%(39)	0.9%(1)
HSW	3.8%(41)	2.7%(21)	3.8%(41)	8.7%(10)
Unpaid males/friends	13.4%(143)	16.6%(131)	13.4%(143)	0.9%(1)
Paid male sex worker	21.1%(225)	25.5%(201)	21.1%(225)	0
<b>Last Sexual encounter with FSW (Paid/Unpaid)</b>				
Unpaid female	22.6%(241)	13.6%(107)	24.1%(40)	81.7%(94)
FSW	35.5%(379)	38.85(305)	39.2%(65)	7.8%(9)
<b>Place of Last Sexual encounter</b>				
Mine	17.2%(78)	18.0%(680)	14.3%(9)	7.7%(1)
Mine colony	52.2%(237)	53.4%(202)	55.6%(35)	0
City	30.6%(139)	28.6%(108)	30.2%(19)	92.3%(12)
<b>Last Sexual encounter arranged by</b>				
Pimp	11.9%(54)	12.5%(47)	9.5%(6)	7.1%(1)
Co-worker	29.1%(132)	31.6%(119)	19.0%(12)	7.1%(1)
Self	59.0%(268)	56.0%(211)	71.4%(45)	85.7%(12)
<b>Condom use with MSW/HSW/Male partners (Paid/Unpaid)</b>				
Condom use with MSW/HSW/Male partners (Paid/Unpaid)	13.0%(59)	13.0%(49)	12.7%(8)	14.3%(2)
<b>Lubricant use with MSW/HSW/Male partners (Paid/Unpaid)</b>				
Lubricant use with MSW/HSW/Male partners (Paid/Unpaid)	49.3%(224)	56.8%(214)	14.3%(9)	7.1%(1)
<b>Sexual activity with FSW (Paid/Unpaid)</b>				
Anal Sex	43.3%(464)	49.0%(386)	39.3%(66)	10.3%(12)
Oral Sex	0.5%(5)	0.4%(3)	1.2%(2)	0
Vaginal Sex	56.2%(602)	50.6%(398)	59.5%(100)	89.7%(104)
<b>Condom use with FSW (Paid/Unpaid)</b>				
Condom use with FSW (Paid/Unpaid)	14.7%(157)	14.4%(113)	10.7%(18)	23.2%(26)
<b>Lubricant use with FSW (Paid/Unpaid)</b>				
Lubricant use with FSW (Paid/Unpaid)	26.3%(279)	30.0%(235)	8.0%(13)	27.0%(31)

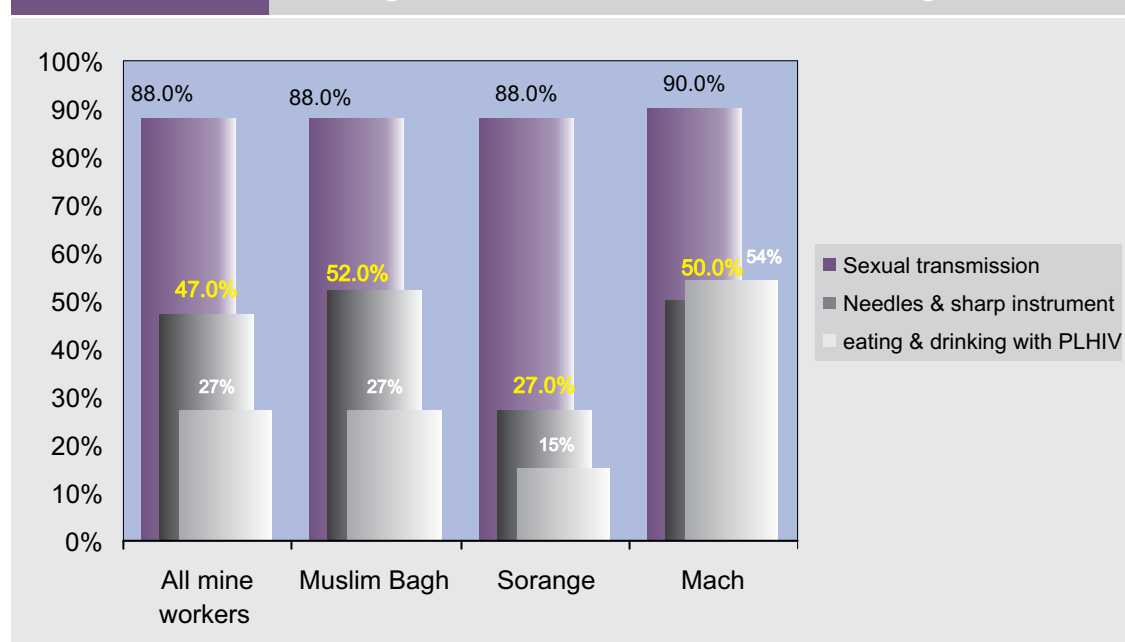
<b>Table 6:</b>		<b>Drug Use among Miners</b>		
<b>Characteristics</b>	<b>All Miners (n=1200)</b>	<b>Study Sites</b>		
		<b>Muslim Bagh (n=855)</b>	<b>Sorange (n=192)</b>	<b>Mach (n=153)</b>
Drug use for non therapeutic purpose	77.0%(922)	86.2%(735)	69.8%(134)	34.6%(53)%
<b>Drugs used in past month</b>				
Afeem ( Opium )	2.0%(18)	1.6%(12)	1.5%(2)	7.7%(4)
Heroin	1.4%(13)	0.9%(7)	0.7%(1)	9.6%(5)
Bhang (Marijuana)	9.4%(87)	8.0%(59)	0%(0)	54.9%(28)
Pharmaceuticals	1.3%(12)	0.5%(4)	2.2%(3)	9.6%(5)
Charas (Hashish)	39.5%(365)	36.0%(265)	43.3%(58)	80.8%(42)
Alcohol	4.7%(43)	1.8%(13)	10.4%(14)	30.8%(16)
Cigarette	97.0%(895)	97.0%(715)	95.5%(128)	100%(52)
Ever injected drugs	1.2%(11)	1.5%(11)	0	0

Approximately 70.5% of mine workers had heard of HIV and/or AIDS. Among those mine workers who knew of HIV and/or AIDS, 47.4% knew that HIV can be

transmitted by sharp instruments/needle (syringe); knowledge of sexual intercourse as mode of HIV transmission was quite high at 88%.

<b>Table 7:</b>		<b>Knowledge about HIV and AIDS</b>		
<b>Characteristics</b>	<b>All Miners (n=1200)</b>	<b>Study Sites</b>		
		<b>Muslim Bagh (n=855)</b>	<b>Sorange (n=192)</b>	<b>Mach (n=153)</b>
Ever heard of HIV or AIDS	70.5%(846)	74.4%(636)	81.8%(157)	34.6%(53)
<b>HIV/AIDS can be transmitted from one person to another person</b>				
Sexual intercourse	87.8%(733)	87.7%(551)	87.1%(135)	90.4%(47)
Sharp instruments/syringe	47.4%(396)	52.2%(328)	27.1%(42)	50.0%(26)
Eating & drinking with PLHIV	26.5%(221)	27.1%(170)	14.8%(23)	53.8%(28)
<b>HIV Prevention</b>				
Condoms	64.5%(530)	62.6%(388)	63.9%(99)	91.5%(43)
Sexual abstinence	89.1%(734)	91.6%(570)	80.0%(124)	85.1%(40)
Ever tested for HIV	1.7%(14)	1.9%(12)	1.3%(2)	0
Self perception of risk for HIV	6.3%(53)	5.7%(36)	9.5%(15)	3.8%(2)

**Figure 4:** Knowledge about Routes of HIV Transmission among Mine Workers



Information collected on how HIV transmission can be prevented revealed that 64.5% knew that using condoms protects against HIV transmission. While about 89% believed that sexual abstinence is a mode of HIV prevention, only 6.3% believed that they were at a risk of acquiring HIV, while 2% had been tested for HIV in the past.

Approximately 79.3% of mine workers were aware of STIs. In the past six months, over half (57%) reported having burning or itching when passing urine, 37% reported pus or an abnormal discharge and almost 31%

reported testicular pain. Of those with symptoms, 28% had sought treatment from hospital, 19% from a dispensary, 27% from hakim/ homeopathic and almost 20% from a pharmacy, indicating some health seeking but also a high proportion of health seeking that may have been ineffective in curing an STI.

### 3.6 HIV infection among mine workers

No sample was found to be HIV sero-positive among any of the DBSs prepared from this study.

**Table 8:** Awareness and Treatment of STIs

Characteristics	All Miners (n=1200)	Study Sites		
		Muslim Bagh (n=855)	Sorange (n=192)	Mach (n=153)
<b>Awareness of STIs</b>	79.3%(950)	78.9%(673)	72.4%(139)	90.2%(138)
<b>Symptoms on genital areas (Last 6 Months)</b>				
Pus or abnormal discharge	36.7%(304)	37.3%(252)	31.5%(45)	63.6%(7)
Burn or Itch when you urinate	57.2%(474)	57.3%(386)	57.3%(82)	54.5%(6)
Testicular Pain	30.9%(256)	28.9%(195)	37.1%(53)	72.7%(8)
<b>Treatment Taken From</b>				
Doctor/Hospital	28.0%(151)	27.9%(127)	30.0%(24)	0
Self	5.6%(30)	5.3%(24)	7.5%(6)	0
Dispensary	18.7%(101)	18.0%(82)	22.5%(18)	25.0%(1)
Hakim/Homeopathic	26.9%(145)	26.4%(120)	30.0%(24)	25.0%(1)
Pharmacy	19.1%(103)	21.1%(96)	8.8%(7)	0

The main limitation was the security situation in the mining areas of Balochistan province. Ramadan fell during the course of the study and during this month the mine workers were unwilling to provide blood samples, which is required for the biological testing for HIV. The study sites could potentially have been more representative. They were selected in consultation with the Ministry of Mines and Minerals and the Provincial AIDS Control Program Balochistan. Site selection was based on security reasons, concentration of laborers and geographical accessibility of the area.

While no HIV infection was found among mine workers, the behavioral data suggests that the potential for the epidemic to spread among this group is high. Mine workers were found to engage in significant levels of high risk sexual activity, including male to male sex among both co-workers/friends and with male and hijira sex workers. Moreover, sex with female sex workers was also frequent. Condom use was low with all partners. Most had some knowledge of HIV and AIDS and its route of transmission and prevention, though there is still a need to improve the knowledge. There was a definite gap between knowledge and practice that must be addressed and simple health education will probably not be enough. Properly designed and delivered Behaviour Change Communication campaigns adapted according to the literacy level of the mine workers will be needed. It is very important for free condoms to also be made available and accessible to mine workers.

The results also show that a very few of them had actually been tested for HIV. This must also be addressed by providing more accessible HIV testing programs for this population.

The level of knowledge regarding STIs and its relationship with HIV needs also to be addressed, and better access to STI treatment also needs to be provided for mine workers. Such treatment centers could act as gateways for entry into more comprehensive counseling and support that would include the provision of specific and targeted health information.

It is clear from the data gathered for this study among mine workers, it's very important to start interventions

for this group. It is also important that this information is integrated in to the planning and delivery of prevention programs.

There is a need to better understand and provide support to this group. It is also suggested that another survey should be conducted among this group in those mining sites which were excluded in this survey due to security reasons.





