Limited prevalence data for HIV, hepatitis B surface antigen (HBsAg), and hepatitis C virus (HCV) exist for Afghanistan. We studied a cross-sectional sample of adult injection drug users (IDUs) in Kabul, Afghanistan, from June 2005 through June 2006. Study participants completed interviewer-administered questionnaires and underwent testing for HIV, antibody to HCV, and HBsAg. Overall prevalences of HIV, HCV, and HBsAg were 3.0% (95% confidence interval [CI] 1.7%–5.1%), 36.6% (95% CI 32.2%–41.0%), and 6.5% (95% CI 4.2%–8.7%), respectively (N = 464). Among male IDUs (n = 463), risky behavior, including sharing syringes (50.4%), paying women for sex (76.2%), and having sex with men or boys (28.3%), were common. Needle sharing, injecting for ≥3 years, and receiving injections from nonmedical providers were independently associated with increased risk for HCV infection. The high prevalence of risky behavior indicate that Kabul is at risk for an HIV epidemic. Scale-up of harm-reducing interventions is urgently needed.

Injection drug use has become increasingly common in Central and South Asia, fostered by readily available opium and heroin (1,2). Many countries in this region are experiencing HIV epidemics driven by injection drug use that is extending to other populations (3,4). Four countries bordering Afghanistan (Pakistan, Tajikistan, Uzbekistan, and Iran), which provided refuge to many Afghans during the extended period of civil war, are experiencing HIV epidemics among injection drug users (IDUs) (1,3,5,6). The population of Kabul, the capital of Afghanistan, has increased to ≈3 million since 2001 because of returning refugees (7,8). Refugees may have acquired high-risk behavior, such as injection drug use, that may place communities at risk upon their return.

Afghanistan provided 88% of the world’s opium supply in 2005 (9). Although noninjection use of opium (smoking, vaporization, or oral ingestion) is traditional in Afghanistan, injecting likely represents a new behavior (10). This behavior may be learned in countries of refuge during times of political unrest, as indicated by the participants in a United Nations Office on Drugs and Crime study in 2003, in which 50% (n = 34) of participants had started using heroin in either Pakistan or Iran (11). A prior study in the border city of Quetta, Pakistan, reported that Afghan IDUs were more likely than their Pakistani counterparts to engage in risky behavior (12). These observations raised concern that injection drug use and accompanying high-risk behavior are increasing in Afghanistan and that a concentrated HIV epidemic may soon ensue (13).

There were an estimated 470 IDUs in Kabul in 2003, although the United Nations Office on Drugs and Crime Afghanistan survey in 2005 estimated that there were 50,000 heroin users in Afghanistan, of whom 14% reported injecting drugs (10,11). The same study also estimated that most IDUs reside in Kabul and, of all heroin-using IDUs interviewed, 70% stated they had shared needles (10). Of IDUs interviewed, all were men, but anecdotal evidence from harm-reduction programs indicated that a few IDUs in Kabul were female (10). Although drug use is illegal in Afghanistan and warrants either rehabilitation for a first offense or imprisonment for recurrent offenses (14) the...
motivating factor stated for initiating injection was con-
stant pain that was not relieved by smoking (10). However,
little is currently known about other aspects of injection
drug use in Kabul, such as syringe sources or harm-reducing
programs.

Little data are available on HIV, hepatitis B surface
antigen (HBsAg), or hepatitis C virus (HCV) prevalence
and associated risk behavior in Afghanistan. As of October,
2005, only 41 cases of HIV had been reported, although
this is believed to underestimate the potential problem (15).
We assessed prevalence of HIV, HCV, HBsAg, and associ-
ated risk behavior among IDUs in Kabul.

Methods

Study Design and Participants

We conducted a cross-sectional study of IDUs in
Kabul, Afghanistan, from June 2005 through June 2006,
through the Voluntary Counseling and Testing (VCT) Cen-
ter at the Central Polyclinic, an Afghan Ministry of Pub-
lic Health facility. At the time of this study, there were 3
harm-reduction programs in Kabul, of which 1 had on-site
syringe exchange.

Eligible participants were those ≥18 years of age who
reported having injected drugs within the past 6 months
(confirmed through injection marks) and were able to pro-
vide informed consent. Before data collection, this study
was reviewed and approved by the investigational review
boards of the University of California, San Diego; the US
Naval Medical Research Unit No. 3; the Walter Reed Army
Institute of Research; and the Ministry of Public Health of
Afghanistan.

Procedures

Potential participants were approached by an expe-
rienced outreach worker known to them. If participants
were interested in entering the study, they accompanied the
outreach worker to the VCT Center. At the VCT, a study
representative explained the study in a confiden-
tial setting and obtained informed consent. The participant was as-
signed a unique study number, the sole identi-
fier, which was required for receiving test results as needed. Partici-
ants were interviewed by a trained study representative
matched to the participant’s sex. The questionnaire includ-
ed sociodemographics, travel and medical histories, past
and current drug use and sexual behavior, and knowledge of
bloodborne and sexually transmitted infections. No data
were recorded from those declining participation or ineli-
gible to enter the study.

Pretest and posttest counseling were given, and rapid
antibody testing was performed by using the Abbott De-
ternine HIV 1/2 test, the Abbott Determine HBsAg test
(both from Abbott Diagnostics Japan, Tokyo, Japan), and
the Standard Diagnostics HCV test (Standard Diagnostics
Laboratories, Yongin-si Gyeonggi-do, Republic of Korea)
for HCV. Participants with a positive HIV test result un-
derwent sequential testing with the OraSure OraQuick HIV
1/2 test (OraSure Technologies, Bethlehem, PA, USA).
Repeatedly positive rapid HIV test results were confirmed
by Western blot (HIV BLOT 2.2; GeneLabs Diagnostics,
Singapore). Hepatitis B was confirmed with a second, se-
rum-based rapid test (Standard Diagnostics HBV; Standard
Diagnostics Laboratories) because nucleic acid testing was
not available in Kabul. The Abbott and Standard Diag-
nostics HBsAg rapid tests had sensitivities of 99.0% and
99.0% and specificities of 99.0% and 100.0%, respectively,
and a positive predictive value of 99.9%, assuming a base-
line HBsAg prevalence of 5.0% (16,17). The presence of
antibody to HCV was confirmed with a recombinant immu-
noblot assay (RIBA) test (RIBA 3.0 SIA; Chiron Corpora-
tion, Emeryville, CA, USA).

All confirmatory testing was performed at the VCT
Center in Kabul by trained laboratory personnel. All par-
ticipants received a small nonmonetary gift and risk-reduc-
tion counseling, with referrals for detoxification and needle
and syringe programs upon request.

Statistical Analysis

Prevalence of infection was calculated with confi-
dence intervals (CIs) based on Poisson distribution for
HIV and binomial distribution for HBsAg and HCV. The
only female participant was excluded from remaining
analyses. Correlates of HIV, HBsAg, and HCV infection
were assessed with univariate and multivariate logistic
regression analyses. Variables were entered into a mul-
tivariate model if they were signi
cantly associated with
HIV, HBsAg, or HCV infection in the 5% level in uni-
ivariate analysis or showed epidemiologic relationships. A
multivariate model was generated to identify factors inde-
dependently associated with HIV, HBsAg, and HCV infec-
tions by using the likelihood ratio test to determine which
variables were retained.

Results

Sociodemographic Data and Prevalence of Infection

A total of 464 participants were enrolled; 463 were
male. Fourteen participants (3.0%, 95% CI 1.7%–5.1%) were
infected with HIV, 30 (6.5%, 95% CI 4.2%–8.7%) were
positive for HBsAg, 170 (36.6%, 95% CI 32.2%–41.0%) were infected with HCV, and 7 (1.5%, 95% CI
0.6%–3.1%) were coinfected with HIV and HCV.

Among male participants, most were Afghan, had
travelled outside Afghanistan in the previous 10 years, and
reported heroin as their most frequently used drug in the
past 6 months, either alone (42.4%) or with pheniramine
maleate (56.0%) (online Appendix Table, available from www.cdc.gov/EID/content/13/9/1327-appT.htm).

Risk Behavior

High-risk injection and sexual behavior were common. Sharing needles or syringes (50.4%) and difficulty obtaining new syringes (43.6%) were frequently reported. Patronizing female sex workers and having sexual relations with men or boys were also common. More than half the participants had been incarcerated; of these, nearly one third injected drugs while in prison. A total of 23.1% had received a therapeutic injection in the past 6 months, and 5.2% had sold or donated blood (online Appendix Table).

Correlates of HIV, HBsAg, and HCV Infection

No sociodemographic variables were significantly associated with HIV or HBsAg infection. Sharing needles and injecting drugs while in prison were associated with HBsAg by univariate logistic regression analysis (online Appendix Table). Multivariate analysis showed that HBsAg remained associated with injecting drugs in prison (adjusted odds ratio 3.23, 95% CI 1.16–9.00). Univariate analysis showed that those with HIV infections were more likely to report needle or syringe sharing and injecting drugs for ≥3 years (online Appendix Table). No variables were independently associated with HIV infection by multivariate logistic regression analysis (results not shown).

Participants with HCV infection were less likely to be educated or married and had higher incomes (online Appendix Table). HCV infection was associated with needle or syringe sharing, injecting drugs for ≥3 years, having sex with men or boys, and receiving injections from a nonmedical provider (online Appendix Table). Adjustment by demographic factors did not appreciably change these relationships. Multivariate logistic regression showed that needle or syringe sharing, injecting drugs for >3 years, and receiving injections from a nonmedical provider were independently associated with HCV infection, and inverse associations persisted for higher education level and for being married (Table).

Discussion

This report is among the first to describe HIV, HBsAg, and HCV prevalence and risk behavior in Afghanistan. The low HIV prevalence among IDUs in Kabul is not surprising given the short median duration of injection drug use. Although opium has been used for centuries in Afghanistan, our data are consistent with the suggestion that injection drug use is a relatively new behavior in this setting (10). Although HIV prevalence was low, 37% were HCV infected, a finding that potentially foreshadows an HIV epidemic caused by risk factors shared by these infections.

| Table. Factors independently associated with HCV infection (n = 170) by multivariable analysis in 463 male injection drug users, Kabul, Afghanistan* |
|---|---|
| Factor | Value |
| HCV prevalence | 107 (36.8) |
| Demographic factors | |
| Married | 0.60 (0.40–0.92) |
| Higher educational level | 0.51 (0.29–0.88) |
| Drug practices | |
| Ever shared needle or syringe | 2.60 (1.71–3.96) |
| Duration injection drug use >3 y | 3.28 (2.17–4.96) |
| Medical encounters | |
| Injections by a nonmedical provider | 2.71 (1.26–5.82) |

*HCV, hepatitis C virus. Values are no. (%) or adjusted odds ratio (95% confidence interval). Analysis was adjusted for marital status, educational level, duration of injecting, sharing needles or syringes, and injections by a nonmedical provider.
participants who reported donating or selling blood were infected with HIV. A prior report estimated that only 30% of blood donations were screened in Afghanistan (22). Furthermore, those infected with HCV were more likely to have had injections from nonmedical providers, which has been linked to a high prevalence of HCV and hepatitis B in neighboring Pakistan (23).

Our study has some limitations. Respondent-driven sampling was not possible because of concerns of compromising the identities of IDUs; participants were enrolled by convenience sampling, which may not be representative of IDUs in Kabul. Because risky behavior was assessed by self-reporting, socially desirable responses may have been made. Analysis of factors associated with HIV and HBsAg had low power because of low prevalence of these infections, which potentially masks some associations. Additionally, testing for surface antigen may have underestimated the true prevalence of hepatitis B infection because only those with acute or chronic infections would be detected. Another approach for future studies would be screening for both surface antigen and antibody to HbsAg and offering vaccination to IDUs negative for this antibody.

In summary, although prevalence of HIV and HBsAg is low among IDUs in Kabul, the prevalence of HCV and high-risk behavior are alarmingly high. Political instability, poverty, mobility, and low literacy may also increase vulnerability of IDUs to HIV and other bloodborne or sexually transmitted infections (13). During the study, 1 needle and syringe program and 3 drug rehabilitation and counseling programs were operating in Kabul; opioid substitution treatment was not available. Initiation or scale-up of interventions, particularly needle and syringe programs and opioid substitution therapy, are urgently needed to prevent an HIV epidemic among Afghan IDUs. Attempts to prevent or control HIV and other bloodborne infections among IDUs without adequate coverage of IDUs by harm-reduction programs have been unsuccessful (24,25). However, settings with outreach programs that linked VCT, needle and syringe programs, and opiate substitution therapies have stabilized HIV prevalence among IDUs at low levels (25,26). Political support for harm-reduction and HIV awareness campaigns among the Ministries of Counter Narcotics, Public Health, and Religious Affairs is present in Afghanistan; donor attention is urgently needed to expand these efforts to avert an HIV epidemic.

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References

Infections in Injection Drug Users


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