HIV Bio-Behavioral Survey among Injecting Drug Users in the East Jerusalem Governorate
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Acknowledgements

The study would not be possible without the support and generous assistance from Dr. Asad Ramlawi (NAC Chairman), Mrs Fadwa Al-Sha’r (Ministry of Interior), and Caritas Jerusalem

Research Team

Dr. Agnes Chatty, WHO
Dr. Randa AbuRabie, WHO
Sonia Dibeh (Study coordinator), Caritas
Isam Jwehan (Site manager and counselor), Al-Maqdese NGO
Hazem Natsheh (Coupon manager and data entry clerk)
Amal Al-Saieed (Interviewer and counselor)
Alaa Kharoub (Interviewer and counselor), Caritas
Talal Hawash (Screener), Caritas
Fahem Muhammad Taha (Screener), Caritas
Dr. Mohammad Shahwan (Biological data collecting), MoH
Dr. Ibrahim Salem (Biological data collecting), MoH
Sadyiah Wazwaz (”Floater”), Caritas
Yousef Hawash (Security)

Aleksandar Štulhofer, PhD (WHO Consultant), University of Zagreb
Executive Summary

A bio-behavioral HIV survey using respondent-driven sampling (RDS) methodology was carried out in Al Azariya, the East Jerusalem Governorate (EJG), from June 6 to August 10, 2010 among injecting drug users (IDUs). The survey aimed to assess the prevalence of HIV, HBV, and HCV, as well as to analyze relevant risk-taking behaviors.

The study included 199 IDUs: 192 participants who were recruited by seven seeds selected by the researchers. Only three of the surveyed IDUs were women. Age range in the sample was 19-56, with the mean age of 41.3 (SD = 8.09, median age = 43). A majority of participants (80.9%) had primary or some primary education. No HIV+ cases were found in the study. Twelve participants were infected with Hepatitis B (6.3%); estimated population proportion (EPP = 5.3%), while 87 participants (45.3%; EPP = 42.0%), plus six of seven seeds, tested positive for Hepatitis C. Ten participants reported being diagnosed with an STI in the past 12 months by a medical professional. Only two took the prescribed therapy.

Less than one fifth of participants (EPP = 17.4%) answered correctly to all five UNGASS questions assessing HIV knowledge. However, when asked specifically about HIV risks related to injecting drug use, most participants seemed to be well informed: 95.5% correctly recognized that HIV can be transmitted by syringe sharing, while 84.9% knew that sharing a needle or syringe washed in water may result in getting infected with HIV. In multivariate analyses, HIV knowledge was not found a significant risk-reducing factor.

Over one third of participants (EPP = 34.0%) reported that they know where free and anonymous HIV testing can be obtained in Jerusalem. A majority (EPP = 61.3%) have tested for HIV. About one third of participants (EPP = 34.4%) stated that they know at least one NGO in Jerusalem that provides services to IDUs. A majority of participants reported receiving injecting equipment (EPP = 22.8%) or free condoms (EPP = 17.6%) from an NGO in the past 12 months.

Last time they injected, 89.0% (EPP) of the surveyed IDUs claimed that they used a sterile needle and syringe. About one fifth of participants (EPP = 18.8%) reported that someone used the same needle or syringe afterwards. A majority of participants stated that they tried to clean the shared injecting equipment at most recent occasion (EPP = 53.8%). Cleaning syringes with cold water was the most often mentioned method (EPP = 68.1). A majority of participants (EPP = 85.4%) reported ever being treated for drug abuse. In the past 12 months, 48.6% (EPP) of the IDUs sampled in the study were arrested for drug abuse. Most participants reported being imprisoned at least once (EPP = 93.4%), with almost every third injecting themselves while in prison (EPP = 29.2%).

The mean age at first sexual intercourse in the sample was 18.2 (SD = 3.58; median = 17). A minority of participants (EPP = 29.2%) reported more than one sexual partner in the past year. About one fifth of the surveyed IDUs used condoms consistently in the past month (EPP = 22.9%), a slightly higher proportion of participants reported using a condom at most recent intercourse (EPP = 30.4%). Only nine percent of surveyed IDUs (EPP = 8.5%) stated that they used a condom the last time they had sex with an injecting partner who was not their steady partner. A minority of participants (EPP = 7.9%) reported selling sex in the last month, or exchanging it for drugs. At last sexual intercourse with a client, a condom was used by 49.1% (EPP) of participants. Buying sex (for money or drugs) in the last month was reported by slightly less than one fourth of participants (EPP = 23.3%). One half of those who paid or gave drugs for sex used a condom at last such occasion (EPP = 47.6%).

In multivariate logistic regression models, having shared injecting equipment in the past week was significantly correlated with personal network size (OR = 4.69-11.04), frequency of injecting drugs (OR = 5.87), education (OR = .16), and injecting drugs when alone (OR = .25). Condom use at most recent sexual intercourse was associated with three independent variables: education (OR = 4.37), having receiving free condoms in the past month (OR = 3.03), and reporting commercial sex (buying or selling sex for money or exchanging it for drugs) in the past year (OR = 3.68). Ever tested for HIV was found significantly predicted by older age (OR = 2.77), use of NGO services (OR = 4.78), and reporting commercial sex (OR = 3.08). Finally, HCV infection was significantly associated with education (OR = 3.87), frequency of illicit drug use (OR = 10.56), and consistent condom use in the past month (OR = 2.99).

Overall, the study pointed to substantial levels of exposure to risk of HIV infection among IDUs in the EJG. It is recommended that services for IDUs should be upgraded by introducing harm reduction programs and expanded. This is essential as the available global evidence points that effects of intervention programs are greatest when HIV epidemic is low, as is the case in the Occupied Palestinian Territory (OPT). Testing for HIV should be promoted and scaled up in the population, as well as the awareness of HIV risks. It is also recommended that the stigmatization of IDUs be tackled in a culturally appropriate manner and that the current imprisonment and treatment policies be re-examined. Considering the observed levels of HIV-relevant risk-taking behaviors among the IDUs, repeated high-quality bio-behavioral HIV surveys in this vulnerable population remain an important task. Such systematic data collection will enable tracing the dynamics of HIV and HCV prevalence and an assessment of the effectiveness of interventions.
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Introduction

Similarly to other Middle Eastern and North African countries, HIV prevalence in the Occupied Palestinian Territory (OPT) is reportedly low (Abu-Raddad et al., 2010). According to the Ministry of Health, the first HIV/AIDS cases in the OPT were diagnosed in 1988. By the end of 2009, 66 cumulative cases have been reported, of which 71.2% were AIDS cases (MoH, 2010).

As the focus of HIV surveillance in low prevalence settings is primarily on the most vulnerable groups (i.e., most-at-risk populations), the current absence of bio-behavioral studies in groups such as injecting drug users, female sex workers, men who have sex with men, and migrant workers remain a substantial obstacle for an efficient response to the epidemic in the OPT. According to available information, injecting drug use seems of particular interest in that respect. In many countries in the world injecting drug use was suggested to be the prime driver of the HIV epidemic (Aceijas & Rhodes, 2007). There is some concern that illicit drug use in the OPT is increasing. It is estimated that about 40,000 individuals abuse drugs, though mostly non-injectable drugs, of which a third live in the East Jerusalem Governorate (EJG) (Palestinian Central Bureau of Statistics, 2007).1

Funded by the Global Fund (GF) national grant, the Palestinian National AIDS Committee (NAC) and WHO office in Jerusalem initiated a mission in July 2009 to conduct an assessment of the situation in the OPT and identify priorities for behavioral HIV surveillance. Due to the fact that the report specified a bio-behavioral survey among IDUs in East Jerusalem as the top research priority, another mission was undertaken in March 2010 to explore the situation in more detail and suggest an appropriate methodology for the study. Following this pre-surveillance assessment, which confirmed that respondent-driven sampling (RDS) would be the most feasible and efficient approach to studying HIV risks among IDUs in the EJG, a bio-behavioral research study was launched in Al Azariya in June 2010.

List of Abbreviations

ART = Anti-retroviral therapy
HBV = Hepatitis B virus
HCV = Hepatitis C virus
HIV = Human immunodeficiency virus
EJG = East Jerusalem Governorate
EPP = Estimated population proportion
GF = Global Fund to Fight AIDS, Tuberculosis and Malaria
IDU = Injecting drug use
IDUs = Injecting drug users
MoH = the Palestinian National Authority Ministry of Health
NAC = National AIDS Committee
NGO = Non-governmental organization
OPT = Occupied Palestinian Territory
PP = Population proportion
RDS = Respondent-driven sampling
SGH = Second generation HIV surveillance
STI = Sexually transmitted infections
UNGASS = United Nations General Assembly Special Session
VCT = Voluntary counseling and testing

1 East Jerusalem Governorate includes all localities and areas specified in 1996 for the purpose of national Palestinian elections (cf. Appendix A). Usually, the EJG is divided into two parts: the first covers East Jerusalem within the wall (the part that Israel annexed in 1967), while the second part includes the parts of the city left outside the wall, as well as the rest of the governorate (cf. Palestinian Central Bureau of Statistics, 2007).
Background

The East Jerusalem Governorate (EJG), a part of the Occupied Palestinian Territory (OPT), is currently divided into two segments: the one which is incorporated in the West Bank and under the Palestinian National Authority, and the other being the Israeli controlled East Jerusalem area occupied in the 1967. According to the Palestinian Central Bureau of Statistics, there were 208,000 Muslim inhabitants living in East Jerusalem in 2008 (53% of the total population of Jerusalem).

The Palestinian population of the West Bank is very young (37% of the population is younger than 15; the median age is 21) and growing (population growth rate is about 2.2%). In social and economic terms, the West Bank has experienced a serious economic downturn since 2000 and the beginning of the Second Intifada. In 2009, when a limited revival of economy begun, the overall standard of living was still bellow the 2000 level. According to the UN data, the national unemployment rate in the OPT was over 25% in 2008.

After almost a decade of economic deterioration mostly due to Israeli closure policies, characterized by restricted access to land and natural resources, disrupted labor flows, manufacture and trade, there are serious economic and social consequences. In 2009, about 46% of the population in the West Bank was living below poverty line according to the CIA World Factbook.

Currently, there are 36 people living with HIV in the OPT, of whom 11 are on ART. The MoH statistics, however, do not include HIV and AIDS cases reported in East Jerusalem –estimated at 18 cumulative cases – which are notified to and followed up by the hospitals in Israel. At the moment, no estimates of the number of people living with HIV in the OPT are available from the UNAIDS and WHO.

According to a study published in 2004, in the 1985-2002 period, 25 AIDS cases and 51 HIV+ cases among adult Israeli Arab citizens were documented in Israeli hospitals (Chemtob & Sroun, 2004). Of the reported cases, 21% were linked to IDU. A majority of HIV/AIDS cases were attributed to heterosexual transmission. The same was true for most AIDS cases (24 out of 47) reported in the OPT. Interestingly, only one case was associated with IDU, i.e. syringe sharing (MoH, 2010).

Most cases were diagnosed among men (42/47) aged 25-45. Clearly, AIDS case reporting can not inform about current or predict future dynamics of HIV epidemic. In the countries with low HIV prevalence, bio-behavioral research among specific, most-at-risk populations is of crucial importance (Brown, 2003; Zaba et al, 2005). Setting up a 2nd generation HIV surveillance (SGHS) system is the main strategy of identifying potential generators of the epidemic. By drawing attention to a silent spread of the virus in especially vulnerable populations, SGHS can help in mobilizing resources, as well as guide intervention and prevention efforts (Diaz et al., 2005; Pervilhac et al., 2005).

Only a handful of HIV-related studies exist in the OPT. Most of them focused on HIV knowledge and attitudes toward people living with HIV (cf. Hussein & Abu-Rmeileh, 2007). None of the studies systematically analyzed HIV-related risk taking. In regard to most vulnerable and hard-to-reach populations, very little or no information is available on female sex workers (FSWs) and men who have sex with men (MSM). Only anecdotal evidence exists about HIV risks among Palestinian migrant workers.

Somewhat more evidence is available on illicit drug use in the OPT. A situation analysis carried out in 2006 suggested that 20,000-45,000 individuals may be abusing drugs in the OPT (Palestinian Central Bureau of Statistics, 2007). At least one third was presumed to be residing in the EJG. Although the report estimated that most of illicit drug use was non-injectable, it noted that IDU may be on the rise. Currently, there is no information on HIV or STI prevalence, or about levels of risk taking, among IDUs in the OPT. An older study, carried out among Israeli IDUs in Jerusalem reported a HCV prevalence of 54% (Maayan et al., 1994). In the early 1990s, HIV prevalence among Israeli IDUs was estimated at 4.0-4.3% (cf. Maayan et al., 1994; WHO/UNAIDS/UNICEF, 2008). A recent national study, carried out on a large-scale sample of IDUs (n = 1443), reported HBV, HCV, and HIV prevalence of 3.5, 35.7, and 0.9%, respectively (Loebstein et al., 2008).

The situation in other neighboring countries is less clear. Although substantial number of IDUs (3,000-89,000) are estimated to be living in Lebanon, Jordan, and Egypt (Acejas et al., 2004; cf. Mathers et al., 2008), very limited data on HIV prevalence in this population is available (Abu-Raddad et al., 2010). However, BDS studies among IDUs have been recently conducted in Egypt and Lebanon (Soliman et al., 2010; Mahfoud, 2010).

The fact that IDU has been responsible for a rapid spread of HIV epidemic in a number of countries world-wide (Acejas & Rhodes, 2007; Reintjes & Wiesing, 2007; Jarlas, 2009) was taken as the starting point for setting research priorities in the OPT. Apart from direct risks of HIV transmission through sharing injecting equipment, IDUs' vulnerability stems from the characteristics of the social environment in which they commonly live (Rhodes et al., 2005; Strathdee, 2010). Poverty and poor health, inaccessibility of health services, violence, and lack of social support are typical characteristics of the social world of many IDUs. Coupled with the existential centrality of securing a daily dose of drugs, such living conditions foster short-term planning, recklessness, and a high tolerance to a range of health risks.
The importance of IDU as a potential driver of HIV epidemic in the OPT was further strengthened by specific socio-cultural factors that curb pre-marital sexuality and restrict the availability of commercial sex. These were the reasons that guided the decision to start SGHS in the OPT with a research study among IDUs. Taking into consideration a consensus among experts that IDU is most prevalent in the EJG, focusing on the situation in East Jerusalem was the next logical choice. Finally, a commitment to using high-quality, state of the art methodology (including probability-based sampling), was judged essential for future research activities within the SGHS framework – both in terms of capacity building and future data comparability.

Method

**RDS Approach**

RDS has been used in various settings to recruit hard-to-reach populations (Heckathorn, 1997; Malekinejad et al., 2008). At the end of 2007, RDS methodology has been used in at least 29 countries in the world (Johnston et al., 2009). HIV prevalence and related risk behaviors among more than 32,000 IDUs were measured using this quasi-random sampling methodology (Malekinejad et al., 2008). One of the key advantages of RDS approach is that it can reach individuals who can not be reached otherwise (e.g. in institutionalized settings or public venues). In brief, RDS is a chain referral method that starts with the selection of a limited number of initial respondents (“seeds”) who are asked to recruit other members of the target population distributing coupons received from the study staff. Each recruited respondent who meets the eligibility criteria and participates in the study is given the same number of coupons and the recruitment continues until targeted sample size is reached. RDS sampling is based on the Markov theory of chains, which demonstrates that the bias introduced by non-random selection of initial respondents is eliminated as the recruitment progresses from wave to wave. Usually after 4-6 waves, the sample composition becomes independent from the initial choice of seeds. Unless its core assumptions about peer recruitment are violated, RDS can produce a probability sample and enable generalization of findings (Abdul-Quader, 2006). Population estimates can be calculated using specific statistical software (RDSat), which enables weighting the data according to personal network size (recruitment probability) and recruitment patterns (selection probabilities).

When respondent-driven sampling (RDS) methodology was proposed for the planned study, its feasibility in the context of East Jerusalem was unknown. Given the fact that RDS is dependent on peer networks and incentives (participants are offered rewards for participation and peer recruitment), a pre-surveillance assessment study was designed, organized, and carried out among IDUs in the EJG to collected information on average network size, degree of overlap between geographically distant networks, appropriate incentive levels, and the preferred type of study site. The study was undertaken in March 2010.

Three areas were covered in this formative research: the Old City, Shofat camp, and Al Azariya (see Appendix A). In total, 82 interviews with IDUs (Mean age=40.7, SD=7.98; Median age=40) were completed. Only four participants were women. (Previously collected data suggested that female IDUs are more hidden than male IDUs. Some seem to be safeguarded at home by their husbands or family members, who may or may not provide them with drugs, while others migrate to Israel to escape social control and sanctions in their local, Palestinian community.) The formative research confirmed that IDUs have reasonably large peer networks (the average personal network size was 29).

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6 The point after which further recruitment can not substantially change the distribution of a particular characteristic in the sample is called equilibrium.
In addition, substantial overlap between geographically distinct networks was confirmed. A majority of the interviewed IDUs reported that they know IDUs in other parts of the city.

The suggested feasibility of RDS did not automatically rule out other probability sampling approaches. Using cluster or time-location sampling would, however, require carrying out interviews and biological testing out in the open. Such procedure would increase risks of further stigmatization and, possibly, of police intervention. It was judged that such strategy would, probably, result in substantial refusal rates. RDS thus seemed least problematic—both logistically and ethically.

The Site

Due to political situation and security issues, Palestinian population in the EJG is subjected to considerable movement restrictions. Consequently, RDS site had to be located at a place accessible to all IDUs from the EJG and not only to those with a Jerusalem ID. As participants in the pre-surveillance assessment study stated their preference for a rented apartment or private medical facility, a spacious flat in Al Azariya was rented and furnished. The site was easily accessible (the apartment house was located by the main road), inconspicuous, and reasonably quiet. Operating hours of the site were 10-4pm six days a week.

Procedure and Participants

According to inclusion criteria, an individual was eligible to participate in the study if he/she was (a) between 18 and 50 years of age, (b) living or working in the EJG, (c) Arabic speaking, and (d) has injected drugs at least once in the past month. All eligible individuals were informed about the nature and requirements of the study (type of data collected, procedures, incentives, etc.) and asked for informed consent. After verbal consent was obtained, the participant was interviewed and then briefed about biological testing (pre-test counseling). After giving blood, the participant received primary incentive (135 NIS)7 and three coupons for peer recruitment. Participants were instructed to re-visit the site in 7-10 days to collect secondarily and their test results. During the second visit, the participant received post-test recruitment as secondary incentive.

For a heavy user, the price of a single heroin dose in East Jerusalem may reach up to 90 NIS (≈ 24 US$). In comparison, a Lebanese RDS study carried out among IDUs in2010. During pre-surveillance assessment, 82 IDUs interviewed in the Old City, Shofat camp, and Al Azariya asked for, on average, 192 NIS (approximately 51 US$) as reimbursement for participation in a planned bio-behavioral HIV study. For a heavy user, the price of a single heroin dose in East Jerusalem may reach up to 90 NIS (≈ 24 US$). In comparison, a Lebanese RDS study carried out among IDUs in the EJG reached only 28% of the sample (Mahtouf et al., 2010). Another RDS study, conducted in Cairo in 2006, succeeded in reaching the planned sample size (n = 413) after four months (Soliman et al., 2010). Nineteen non-injecting drug users were screened out and one eligible participant refused to participate in the study. Three eligible participants were excluded from the dataset due to incorrect coupon numbers. As neither of the three was a successful recruiter, no chains were affected by this exclusion.

Questionnaire and Measures

The questionnaire used in this study was developed by the author of this report and translated in Arabic by a WHO officer in Jerusalem. In its final form, the questionnaire consisted of 78 variables and was divided into several sections (see Appendix B). In addition to sociodemographic data, information on drug use, sexual behaviors, utilization of services catering to IDUs, prison experiences, STI symptoms, HIV knowledge, HIV testing, and HIV risk self-assessment were collected. In most cases, the standardized UNGASS indicators (UNAIDS, 2007) were used, particularly when assessing injecting drug use, risky sexual behaviors, and HIV knowledge. On average, the questionnaire took about 20 minutes to complete.

Biological component

Tests were done for HIV, Hepatitis C and Hepatitis B. Venous blood (5 ml) was drawn from participants and refrigerated serum samples were transported from the site to the central laboratory in Ramallah every two days. DRG Diagnostic Kit for Antibody to HIV 1&2 (sandwich), EIA-3897, was used. For HBV and HCV testing, DRG Diagnostic Kit for Hepatitis B Surface Antigen (EIA-3892) and DRG Diagnostic Kit for Antibody to Hepatitis C Virus (EIA-3896) were used.

Personal network size was assessed by a sequence of the following four question: (1) “How many injecting drug users who live in the East Jerusalem Governorate do you know by name (and they know you be name or nickname)?”, (2) “How many of them have you seen during the last three months?”, (3) “How many of those you saw were younger than 18?”, and (4) “How many were older than 50?” To check the validity of reported personal network size, the same sequence of questions was used when participants returned to the site for test results and secondary incentives. Confirming the often cited problem with recall accuracy, we found discrepancies between the network size reported at first and second visit. Only 25 of the 90 participants who revisited the site reported the same network on both occasions. Spearman’s rank correlation between the two reports was .58, p<.001.

Statistical Analysis

RDSat (version 6.0.1) statistical software was used to obtain weighted population proportions with 95% confidence intervals of the main variables of interest. SPSS 16 statistical software package was used for multivariate logistic regression analysis. In order to adjust these analyses for specific features of network-based sampling, personalized weights were imported from RDSat for each dependent variable. Seeds were excluded from all analyses except the assessment of sociodemographic characteristics of the sample.

1 US$ ≈ 3.8 NIS (as of August 2010). During pre-surveillance assessment, 82 IDUs interviewed in the Old City, Shofat camp, and Al Azariya asked for, on average, 192 NIS (approximately 51 US$) as reimbursement for participation in a planned bio-behavioral HIV study. For a heavy user, the price of a single heroin dose in East Jerusalem may reach up to 90 NIS (≈ 24 US$). In comparison, a Lebanese RDS study carried out among IDUs in2010. During pre-surveillance assessment, 82 IDUs interviewed in the Old City, Shofat camp, and Al Azariya asked for, on average, 192 NIS (approximately 51 US$) as reimbursement for participation in a planned bio-behavioral HIV study. For a heavy user, the price of a single heroin dose in East Jerusalem may reach up to 90 NIS (≈ 24 US$). In comparison, a Lebanese RDS study carried out among IDUs in the EJG reached only 28% of the sample (Mahtouf et al., 2010). Another RDS study, conducted in Cairo in 2006, succeeded in reaching the planned sample size (n = 413) after four months (Soliman et al., 2010).

7 Spearman’s rank correlation between the two reports was .58, p<.001.

8 All blood samples will be kept for one year in case any re-testing is needed.
Ethical Considerations

All study procedures were carried out in accordance with ethical principles stipulated in the Declaration of Helsinki. Informed consent for both the behavioral and biological data collection was asked from each participant. To protect participants’ anonymity (no personally identifying information was collected at any point), screeners signed a consent form after the participant gave his/her consent orally. The signature testified that the consent was given. Interviews were conducted privately, in separate rooms, to ensure confidentiality. All team members received training on ethical conduct in the field.

As no institutional review board was in place in the OPT at the time of the survey, all study procedures were approved by the Palestinian National AIDS Committee.

Results

In this section we present the major findings from the study. We start with descriptive analysis of the sample (non-weighted data) and then proceed to report on all HIV-relevant indicators (RDSAT weighted data). Finally, using weighted data, we present the results of multivariate analyses of the correlates of HIV/STI risk taking among IDUs in the EJG.

Sociodemographic Characteristics of the Sample

Only three of 199 participants were women (all seeds were men.) Age range in the sample was 19-56, with the mean age of 41.3 (SD = 8.09; median = 43). A majority of participants (80.9%) had primary or some primary education. Of the rest, 10 participants (5%) reported no education, 25 (12.5%) secondary or some secondary education, and three college education. Most were married (131/199; 66.5%), but a substantial minority (41/199; 20.8%) reported being single at the time of the study. Roughly equal proportions of participants were living in their own apartment/house (72/199; 36.2%) or in a rented place (70/199; 35.2%). About one fifth of participants (41/199; 20.6%) reported living with their parents.

A minority of the surveyed IDUs were employed (7.5%) or working part time (19.1%) at the time of the study. Most others reported either “getting by” (24.1%), i.e. stealing/begging, or being supported by their families (18.6). Younger participants were significantly more likely to be employed, either full time or part time, than older participants (F = 4.69; p < .01). While the average age of those who were employed was 37-38, the mean age of unemployed participants was 42.

Almost three quarters of participants (72%) stated monetary incentives as the main reason for their participation.11 Only 27% reported that they came because of anonymous and free testing. The latter finding may account for the fact that only 90 participants (45.2%) returned to the site to collect their test results.

HIV, HBV, HCV Prevalence and Self-Reported STI Incidence

No HIV+ cases were found in this study. Fifteen percent of samples were retested and all confirmed the previous (negative) result. Ten participants (estimated population proportion, EPP = 5.3%) were HBV+, while 87 participants (EPP = 42.0%) tested positive on HCV (see Table 1). The network sampled in the study was inspected for patterns of recruitment characterized by the same HCV status. The rationale was that if IDUs recruited peers they see most often and spend most time with (probably, including injecting drugs together), clusters of HCV- and HCV+ participants should be visible when inspecting the network structure. This assumption

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10 Seeds were included in these analyses.
11 This would suggest that the level of incentives offered was appropriate.
12 EPP represents an RDS weighted sample proportion that estimates distribution of a certain characteristic in the population represented by the sample.
was not confirmed as only one and relatively small, cluster of HCV+ individuals was found (Figure 1).

Figure 1 – Peer recruitment chains by HCV status (red nodes denote HCV+ injecting drug users)

Ten participants (5.2%) reported being diagnosed, by a medical professional, with an STI in the past 12 months. Only two of them took the prescribed therapy.

TABLE 1 – Sample and population prevalence (RDS weighted data) of the core biological and behavioral indicators of HIV-related risk taking

<table>
<thead>
<tr>
<th>Indicator</th>
<th>n/Na</th>
<th>Sample prevalence (%)</th>
<th>Estimated population prevalence (%)</th>
<th>Population prevalence 95% CI</th>
<th>Equilibrium reached at wave #d</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBV</td>
<td>12/192</td>
<td>6.3</td>
<td>5.3</td>
<td>1.3-10.7</td>
<td>2</td>
</tr>
<tr>
<td>HCV</td>
<td>87/192</td>
<td>45.3</td>
<td>42.0</td>
<td>31.9-52.0</td>
<td>2</td>
</tr>
<tr>
<td>Shared injecting equipment in the last week</td>
<td>115/192</td>
<td>59.9</td>
<td>51.7</td>
<td>32.7-42.9</td>
<td>2</td>
</tr>
<tr>
<td>Used sterile injecting equipment at last injection</td>
<td>132/192</td>
<td>68.8</td>
<td>89.0</td>
<td>83.4-93.3</td>
<td>2</td>
</tr>
<tr>
<td>More than one sexual partner in the past year</td>
<td>73/192</td>
<td>38.0</td>
<td>29.2</td>
<td>20.8-40.2</td>
<td>2</td>
</tr>
<tr>
<td>Used a condom at most recent sexual intercourse</td>
<td>50/190</td>
<td>26.3</td>
<td>30.4</td>
<td>19.8-39.5</td>
<td>2</td>
</tr>
</tbody>
</table>

*Seeds (n=7) not included in the total number (N)

*aIn-Exchanged it for drugs

*bProvided correct answers to all five UNGASS indicators of HIV knowledge

*cThe column contains information about the study wave in which equilibrium was reached for a particular indicator.
HIV Knowledge, HIV testing, and Utilization of Services

Only 37 participants (EPP = 17.4%) answered correctly to all five UNGASS questions assessing HIV knowledge. Another 49 participants provided correct answers to four and 56 participants to three questions. However, when asked specifically about HIV risks related to injecting drug use, most participants seemed to be well informed; 95.2% (EPP) correctly stated that HIV can be transmitted by syringe sharing, while 85.4% (EPP) knew that sharing a needle or syringe washed in water may result in getting infected with HIV.

About one third of participants (EPP = 34.0%) reported that they know where free and anonymous HIV testing can be obtained in Jerusalem. A majority (EPP = 61.3%) have tested for HIV at least once, with 30.6% (EPP) of participants having tested in the past 12 months. More than a half of the surveyed IDUs (EPP = 57.5%) stated that they received the result of their most recent HIV test.

In total, 69 participants (EPP = 34.4%) reported that they know at least one NGO in Jerusalem that provides services to IDUs. (Sixty participants were able to name one or more of these NGOs, run by an Israeli, Palestinian or international organizations.) A minority of participants reported receiving injecting equipment (EPP = 22.8%) or free condoms (EPP = 17.6%) from an NGO in the past 12 months.

Patterns of Injecting Drug Use

On average, the surveyed IDUs were almost 29 years of age (Mean age = 28.8; SD = 8.25; Median = 29) when they first injected. During the last month, a majority of them injected drugs 2-3 times a day (EPP = 51.0%). Four or more injections per day were reported by 14.3% (EPP) of participants. During the past month, over a half of participants (EPP = 55.5%) injected drugs in a shooting gallery. A minority reported taking drugs in the open (EPP = 15.1%). Last time they injected, 60.9% (EPP) of participants were alone. (As could be expected, a great majority of those, 87.4%, used sterile injecting equipment.) Heroin was the most popular drug in the sample (86.9%), followed by cocaine (13.1%). Contrary to expectations (cf. the 2007 report by the Palestinian Central Bureau of Statistics), polydrug use was rather uncommon. Only 12 participants were combining heroin with other illegal substances. Ever to have lost consciousness due to overdosing was reported by 47.0% (EPP) of participants.

A majority of participants stated that they did not use somebody else’s injecting equipment in the past week (EPP = 68.3%). Others reported borrowing needles and syringes from 1-3 persons (EPP = 19.3%). Most often, the equipment belonged to friends (EPP = 58.2%), but sometimes also to strangers (EPP = 13.9%). Last time they injected, 89.0% (EPP) of the surveyed IDUs claimed that they used sterile injecting needle and syringe. However, 18.8% (EPP) reported that someone – most often, one or more friends (EPP = 94.4%) – used the same needle or syringe afterwards. A majority of participants tried to clean the shared injecting equipment at such occasion (EPP = 53.8%). Cleaning syringes with cold water was the most often mentioned method (EPP = 68.1). A minority of participants used boiling water (EPP = 10.7%). Only one participant reported using bleach and another mentioned alcohol. About one third of the surveyed IDUs stated another, unspecified method of cleaning shared injection equipment (EPP = 34.1%).

When asked about where did they obtain new needles and syringes in the past month, most participants reported buying them in a pharmacy (EPP = 73.6%). Receiving syringes from an NGO was mentioned by 22.8% (EPP) of the surveyed IDUs.

Treatment and Imprisonment

A great majority of participants (EPP = 85.4%) reported ever being treated for drug abuse. In regard to the type of treatment, most IDUs mentioned an NGO-based rehabilitation program (EPP = 67.1%). A small minority of participants (EPP = 5.4%) experienced a detoxification treatment in prison. In the past 12 months, 48.6% (EPP) of the IDUs sampled in the study were arrested for drug abuse (more than 90% reported ever being arrested). Not surprisingly, imprisonment was reported by a vast majority of participants (EPP = 93.4%). A substantial proportion of the surveyed IDUs injected themselves while doing time (EPP = 29.2%).

Sexual Risk Taking

Participants’ mean age at first sexual intercourse was 18.24 (SD= 3.58; Median = 17). At the time of the survey, a majority of IDUs were sexually active in the past month (EPP = 63.3%). A minority of participants (EPP = 29.2%) reported more than one sexual partner in the past year. (On average, four sexual partners (SD = 8.68) were reported in the same period.) Over one fifth of the surveyed IDUs used condoms consistently in the past month (EPP = 22.9%). As expected, a somewhat higher proportion reported condom use at most recent intercourse (EPP = 30.4%). A minority of surveyed IDUs had sexual intercourse with a casual drug-injecting partner in the past month 18.1% (EPP). Less than one in ten participants (EPP = 8.5%) stated that they used a condom the last time they had sex with an injecting partner who was not their steady partner. (Having a steady partner or spouse who also injects drugs was reported by 17.8% (EPP) of participants.)

A small minority of participants (EPP = 7.9%) – including one of the three surveyed female IDUs – reported selling sex, or exchanging it for drugs, in the last month. The last time they had sexual intercourse with a client, a condom was used by about one half (EPP = 49.1%) of participants. Buying sex (for money or drugs) in the last month was reported by less than one fourth of participants (EPP = 23.3%). One half of those who paid or gave drugs for sex used a condom at last such occasion (EPP = 47.6%).

Lifetime experience of anal sex was acknowledged by 23.3% (EPP) IDUs. In most cases, anal sex was experienced with a person of the opposite sex (EPP = 74.7%). Three men reported having anal sex exclusively with men, while six stated that they had experienced it both with men and women. A minority of participants used a condom the last time they had anal sex (EPP = 27.1%).

Correlates of HIV Risk Taking: Multivariate Explorations

Four multivariate logistic regressions were carried out to analyze predictors and correlates of: (a) sharing drug injecting equipment in the past week, (b) using condom at most recent sexual intercourse, (c) ever testing for HIV, and (d) being infected with HCV.15 The findings of the first regression analysis are shown in Table 2. Having shared needles and syringes was significantly correlated with four independent variables. As expected, personal peer network

14 In sharp contrast, only three percent of IDUs surveyed in a recent Lebanese RDS study reported injecting themselves with psychoactive drugs while in prison (Mahfoud et al., 2010).
15 All four regression models fitted the collected data well, as shown by statistically insignificant values of Hosmer and Lameshow goodness-of-fit tests.
size and the frequency of injecting drugs in the past month significantly increased the odds of sharing injecting equipment (OR = 4.69-11.04 and OR = 5.87, respectively). Having better education (secondary or college) and being alone at the most recent drug-injecting episode substantially decreased the odds of sharing injecting equipment. In comparison to participants with no or only primary education, better educated IDUs were 84% less likely to have shared injecting equipment. Similarly, participants who reported being alone the last time they injected were 75% less likely to have shared needles and syringes in the past week than those who injected together with other individuals.

**TABLE 2 – Correlates of sharing injecting equipment in the past week**

<table>
<thead>
<tr>
<th>n=194</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.54</td>
<td>.19-1.52</td>
</tr>
<tr>
<td>0=19-40; 1=41 and older</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>.16**</td>
<td>.04-.58</td>
</tr>
<tr>
<td>0=no education or only primary; 1=secondary or higher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>.91</td>
<td>.37-2.24</td>
</tr>
<tr>
<td>Employed (full or part time)</td>
<td>1.72</td>
<td>.65-4.53</td>
</tr>
<tr>
<td>Personal network size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 (referent)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11-39</td>
<td>4.69**</td>
<td>1.56-14.06</td>
</tr>
<tr>
<td>40</td>
<td>11.04*</td>
<td>1.14-107.27</td>
</tr>
<tr>
<td>Age at first drug injecting</td>
<td>.64</td>
<td>.25-1.65</td>
</tr>
<tr>
<td>Frequency of injecting drugs in the past month</td>
<td>2.16-15.95</td>
<td></td>
</tr>
<tr>
<td>0=up to once a day; 1=two or more times per day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injected alone the last time he/she used drugs</td>
<td>.11-.58</td>
<td></td>
</tr>
<tr>
<td>Used NGO services in the past year</td>
<td>.16-1.27</td>
<td></td>
</tr>
<tr>
<td>Ever tested for HIV</td>
<td>.65</td>
<td>.27-1.56</td>
</tr>
<tr>
<td>HIV knowledge</td>
<td>.81</td>
<td>.35-1.89</td>
</tr>
<tr>
<td>0=median or lower score; 1=higher than median score</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 3 – Correlates of condom use at most recent sexual intercourse**

<table>
<thead>
<tr>
<th>n=197</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.75</td>
<td>.31-1.87</td>
</tr>
<tr>
<td>0=19-40; 1=41 and older</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>4.37**</td>
<td>1.85-10.33</td>
</tr>
<tr>
<td>0=no education or only primary; 1=secondary or higher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>.83</td>
<td>.40-1.73</td>
</tr>
<tr>
<td>Employed (full or part time)</td>
<td>1.35</td>
<td>.58-3.14</td>
</tr>
<tr>
<td>Personal network size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 (referent)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11-39</td>
<td>.61</td>
<td>.20-1.85</td>
</tr>
<tr>
<td>40</td>
<td>.31</td>
<td>.04-2.53</td>
</tr>
<tr>
<td>Frequency of injecting drugs in the past month</td>
<td>.75</td>
<td>.46-1.23</td>
</tr>
<tr>
<td>0=up to once a day; 1=two or more times per day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received free condoms in the past month</td>
<td>3.03*</td>
<td>1.28-7.17</td>
</tr>
<tr>
<td>Sold or bought sex in the past year</td>
<td>3.68**</td>
<td>1.55-8.74</td>
</tr>
<tr>
<td>HIV knowledge</td>
<td>1.53</td>
<td>.74-3.18</td>
</tr>
<tr>
<td>0=median or lower score; 1=higher than median score</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* *p<.05; **p<.01

Condom use at most recent sexual intercourse was associated with three independent variables: education, receiving free condoms in the past month, and reporting commercial sex in the past year (see Table 3). All three indicators increased the odds of using a condom at most recent intercourse. In comparison to lesser educated participants, those with secondary or higher education were almost 4.5 times more likely to have reported condom use. Participants who reported commercial sex were over 3.5 times more likely than those who did not report such experience to have used a condom the last time they had sex. Importantly, the IDUs who reported receiving free condoms in the past month were three times more likely to have reported using a condom at last intercourse than those who were not given free condoms.
Ever tested for HIV was found significantly predicted by the following independent variables: age, utilization of NGO services, and reporting commercial sex (Table 4). Older participants, those who reported using dedicated NGO services in the past year, and those who either bought or sold sex (or exchanged it for drugs) were more likely to have ever tested for HIV. In comparison to IDUs aged 19-41, older participants aged were over 2.5 times more likely ever to have tested for HIV. Those who reported using NGO services in the past year were five times more likely to have tested than those who did not use such services. Finally, IDUs who either sold or bought sex for money were three times more likely than their peers who did not report commercial sex to have ever tested for HIV.

Predictors and correlates of HCV infection were assessed in the final regression model. As findings presented in the Table 5 demonstrate, HCV infection was associated with education, frequency of drug use, and consistent condom use. Unexpectedly, better educated participants were over 3.5 times more likely to be infected with Hepatitis C than their lesser educated peers. More frequent drug injection significantly increased the odds of being HCV+. In comparison to IDUs who injected less often, participants who reported injecting drugs two or more times per day were over 10 times more likely to be HCV+. Consistent condom use in
the past month was also significantly associated with HCV infection. Most probably, this relationship reflected an effort on the part of participants who knew their HCV status to protect their sexual partners.

<table>
<thead>
<tr>
<th>TABLE 5 – Correlates of HCV infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=144</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td>(0=19-40; 1=41 and older)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
</tr>
<tr>
<td>(0=no education or only primary; 1=secondary or higher)</td>
</tr>
<tr>
<td>Married</td>
</tr>
<tr>
<td>Employed (full or part time)</td>
</tr>
<tr>
<td><strong>Personal network size</strong></td>
</tr>
<tr>
<td>10 (referent)</td>
</tr>
<tr>
<td>11-39</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td><strong>Frequency of injecting drugs in the past month</strong></td>
</tr>
<tr>
<td>(0=up to once a day; 1=two or more times per day)</td>
</tr>
<tr>
<td>Consistent condom use in the past month</td>
</tr>
<tr>
<td>Sold or bought sex in the past year</td>
</tr>
<tr>
<td><strong>HIV knowledge</strong></td>
</tr>
<tr>
<td>(0=median or lower score; 1=higher than median score)</td>
</tr>
<tr>
<td>*p&lt;.05; ** p&lt;.01</td>
</tr>
</tbody>
</table>

HIV knowledge was not a significant correlate in any of the four multivariate analyses.

Discussion

Validity of RDS Approach

Basic requirements of respondent driven sampling are that members of a given population are sufficiently networked and do not discriminate when recruiting each other (for example, by recruiting exclusively among one’s relatives). Information about the average network size in our sample (mean = 49.28, SD = 56.10; median = 20), suggest that the initial assessment of the appropriateness of RDS was correct. IDUs in the EJG were well-networked. A conclusion, based on the pre-surveillance assessment study, that these networks were overlapping in terms of localities or neighborhoods in which IDUs reside was confirmed (cf. Figure 2). The IDUs surveyed in this study came from 21 different localities/neighborhoods within the EJG.

Another important methodological requirement of RDS is that the person who recruits and the one who is recruited by him/her are not strangers to one another. Such lack of a social bond between the two would imply that they are not members of the same social network, which would violate the very principle of network-based sampling. In our sample, only four participants reported that they received a coupon from someone they did not know from before.17 One half of IDUs in the sample were recruited by a friend, 42% by an acquaintance, and about six percent by a relative.

One of the fears that were initially raised – given the relatively high incentives offered for participation – was that many non-injecting drug users may attempt to participate in the study. To prevent this, two screeners' with extensive personal and professional experience with the drug scene in East Jerusalem were enlisted. To further ensure a high quality screening procedure, the screeners received additional training prior to the study launch. All this resulted in an efficient and thorough eligibility screening in which 19 non-injecting drug users were identified and excluded from the study.

Contrary to expectations, the recruitment process was slower than is usually encountered in RDS studies among IDUs. As extending the study for another month was both financially and organizationally not possible, the targeted sample size (n = 353) was not reached. Several reasons were suggested as potential explanations by local experts:

(a) Political instability and security situation (numerous check points) made traveling from one part of Jerusalem to another cumbersome and costly for potential participants (Al Azaryia is relatively distant from the center of East Jerusalem);

(b) Some IDUs may have not had the money for transportation to the site;


17 Up to 10% of «blind» recruitments are usually tolerated in RDS studies.
HIV Bio-Behavioral Survey among Injecting Drug Users in the East Jerusalem Governorate

The recruitment process did not seem to be affected by preferential recruitment. As the analysis depicted in Figure 3 shows, the relationship between a recruiter and his/her recruitees was only weakly affected by residence (cf. the blue and grey clusters in the figure). The findings confirmed the existence of substantial overlap between geographically distinct localities, as suggested by our formative study.

Figure 3 – Peer recruitment chains by locality/neighborhood (each color represents different locality)

The so called recruitment quota was met by giving each participant (including the seeds) the same number (3) of recruitment coupons. This rule was strictly observed throughout the study. Finally, personal network size was asked using a sequence of questions and carefully recorded by trained interviewers. No missing values and no zero-sized networks were observed in the dataset.

Although the planned sample size was not reached, the point of equilibrium was reached for each of the core indicators (cf. Table 1).20

Apart from not being able to reach the planned sample size, the RDS study among IDUs in the EJG fulfilled all required methodological standards. All four core requirements (sufficiently networked population, strict recruitment quotas, long enough recruitment chains, and reliable recording of personal network size; see Johnston et al., 2009) were met. As Figure 2 shows, IDU population in the EJG was well-networked and the recruitment chains generated in the study were quite long (the longest chain reached 13 waves). The length of chains was not only statistically relevant (reaching equilibrium requires chains of certain length), but also important for reaching less connected segments of the population.

Figure 2 – The structure of peer recruitment process (blue nodes represent “seeds”)

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Contextualizing the Findings

The study found substantial levels of HIV-relevant risk taking. In this sample of mostly unemployed men in their 40s with little education, the prevalence of HCV – which is the standard proxy for HIV vulnerability in the settings characterized by low-level epidemic – was 45%, with estimated population proportion of 38%. A recent Lebanese RDS study found a similar prevalence of HCV (51%) in a sample of 81 IDUs (Mahfoud et al., 2010).

A substantial proportion of participants reported sharing injecting equipment in the week preceding the survey (59%; EPP = 32%). Although most of the surveyed IDUs claimed that they used a sterile needle and syringe last time they injected, over one third (44%) reported that someone used their equipment after they have injected themselves. Considering that the most popular method of syringe cleaning was washing with cold water, the reported patterns of IDU point to a substantial vulnerability to HIV infection. Such conclusion is further supported by the data on sexual risk taking. The reported prevalence of condom use at most recent sexual intercourse is low (26.3%; EPP = 30.4%). However, when condom use at last intercourse with an injecting partner who is not a steady partner is analyzed, the proportion drops to less than 10 percent. In addition, approximately one third of participants reported either selling or buying sex in the past year. Less than a half of them used a condom at last commercial sex. The finding is of significance as about a third of participants who reported the experience of selling or buying sex were married. Clearly, such behaviors constitute a risk for their spouses and may “bridge” infections to the low-risk population (Abu-Raddad et al., 2010).

There are also a number of encouraging findings. Almost all participants had at least basic understanding of the association between IDU and HIV infection. Although HIV knowledge was not associated with participants’ education, having more than primary education was shown to decrease the likelihood of sharing needles and syringes – even when controlling for a number of relevant factors, including other socio-demographic characteristics. More importantly, the existing services targeting IDUs were found as likely to have an impact. Two findings are central in this respect. Participants who received free condoms in the month preceding the survey were significantly more likely to have used a condom at last sexual intercourse. Similarly, those who reported to have used NGO provided services in the past year were more likely ever to have tested for HIV. Although these findings should, until replicated, be considered preliminary, they signal an existing (and institutionalized) potential for HIV risk reduction.

Efforts to reduce HIV risks related to IDU can not benefit from an individualized conceptualization of the causes and effects of drug use (Strathdee et al., 2010; Rhodes et al., 2005). What is needed, instead, is a multifaceted model characterized by a number of contributing factors (such as poverty, policing, peer networks, and violence) that interact in an often complex manner. Consequently, the socio-cultural context of IDU in the EJG and West Bank remains essential for understanding the dynamics of IDU, as well as for setting up a robust HIV surveillance system. This context is characterized by the persisting economic hardship, largely caused by the ongoing occupation and military activity. Wide-spread unemployment and poverty had (and continue to have) an enormous impact on the Palestinian household system, both in terms of eroding the authority of elders and intensifying migration. Especially in the late 1970s and 1980s, the latter process resulted in many young people leaving school and joining the Israeli labor market. Working at an early age and becoming economically independent (earning much more than one’s parents and relatives back in the OPT) may have been conducive to drug use as these young people were living in a culture different from their own, freed from the traditional social control located in the family and local community (Palestinian Central Bureau of Statistics, 2007). In the later years, particularly during the 1990s, economic life in the OPT deteriorated further due to military and political reactions to the two Intifadas. Chronic joblessness, poverty in the densely populated areas, frequent violence and daily struggles with security regulations, political instability, and hopelessness represented a set of obstacles to normal life. For some, abusing drugs became a quick escape route. Strong stigmatization of “deviant behaviors”, which is a part of the traditional Palestinian culture based on the extended family system and collectivist values, often resulted in further isolation of drug abusing individuals, especially those who injected. The present situation in the OPT remains similar.

Clearly, political situation, insecurity, economic deprivation, and frustration have huge epidemiological ramifications. All these macro factors will, most probably, continue to generate conditions conducive to drug abuse. It is important to note, however, that HIV prevention can be conducted, to a significant extent, independently of the overall dynamics of drug abuse (see Degenhardt et al., 2010). Efficient prevention and intervention programs may not – and often do not – drive down the number of IDUs, but they decrease the likelihood of HIV transmission through injecting drugs and/or unprotected sex. Building a robust HIV surveillance system in the OPT remains, therefore, an important and achievable goal.

Finally, several study limitations need to be mentioned. A relatively small sample size, often reflected in wide 95% confidence intervals, reduced statistical power of the presented analyses. The issue of representativeness (i.e. how well the sample mirrors the population of IDUs in the EJG) needs to be considered against a relative socio-demographic homogeneity of the sample. Does the fact that only a few female and younger male IDUs were sampled dictates the findings to be extrapolated exclusively to older male population of IDUs? This, in our view, remains an open question. According to the information collected during the pre-surveillance assessment, female IDUs seem to be few and usually unconnected to wider IDU networks due to strict family control. In the case of young men, both the available qualitative data and experts’ opinions suggested that injecting drug use may not be very popular among younger drug users in the EJG. To be able to keep their jobs, young men seem to prefer the use of non-injectable drugs. Although more research is needed to confirm this tentative conclusion, there is clearly some evidence (apart from the methodological implications of RDS) to suggest that our sample may indeed represent the true population of IDUs in the EJG.

23 It should be noted that the data on these services is not uniform across the EJG.

24 Interestingly, the same percentage of IDUs who ever tested for HIV (85%) was found in the Lebanon study (Mahfoud et al., 2010). In the 2006 Egyptian RDS study, only about six percent of 413 IDUs sampled in Cairo reported ever testing for HIV.
Recommendations

(1) Upgrade and expand the provision of services for IDUs

- The existing NGO capacities do not seem sufficient. According to the findings, only a minority of IDUs were familiar with and used the services provided by the NGOs working with the population. To reach a larger portion of the population, outreach work should be intensified and extended to a greater number of locations in the EJG.
- The crucial roles of sterile syringe provision and opioid substitution in HIV prevention among IDUs are well-established, particularly in low-prevalence settings (Strathdee et al., 2010; Degenhardt et al., 2010; Jarlais, 2009). In line with the international experience and best practice guidelines, harm-reduction programs should be considered in the EJG and West Bank. Introducing a needle and syringe exchange program could significantly reduce HIV risks in the population and bring more IDUs in contact with NGOs. In itself, this would be of great importance for future intervention, prevention, and surveillance activities.
- According to our findings, condom use was associated with the provision of free condoms. NGOs working with the population and other relevant institutions/organizations should continue to distribute free condoms to IDUs (cf. Degenhardt et al., 2010). A brochure which would focus on the importance of using protection when having sex (to protect oneself and one’s partner/s from STIs, particularly HCV and HIV), should also be considered for IDUs.

(2) Increase the number of IDUs testing for HIV

- Free and anonymous HIV testing should be made more available to this at-risk population. Several outreach points and/or teams should be set up and organized in the EJG. As IDUs tend to avoid the mainstream health services, outreach services should provide free and anonymous testing, HIV and STI-related information in popular format, free condoms, and referrals to a dedicated client-centered medical facility when treatment for HIV or STIs is needed.
- Clear procedures and guidelines for HIV treatment need to be developed.

(3) Increase the awareness of HIV risks

- As a majority of the surveyed IDUs did not consider themselves at substantial risk for HIV infection, it would be important to increase the awareness about the exposure to HIV risks. Again, outreach work would be the logical framework for such an intervention. A simple and visually compelling leaflet promoting HIV risk awareness among IDUs should be designed and distributed in the population.

25 Overall, HIV testing among most-at-risk populations in the Middle East needs substantial scaling up (see Hermez et al., 2010).

As the behavioral part of this study had to rely on self-reporting, the validity of some findings needs to be assessed in the Palestinian socio-cultural context, characterized by a strong stigmatization of IDU and the imperative of conforming to social norms. In this respect, it is likely that some participants felt the pressure of social expectations, which may have prompted socially desirable answers. This may have been the case particularly with the question regarding the use of sterile injecting equipment. Although the two interviewers in the study were trained in collecting sensitive information and observed during the initial interviews, the impact of social desirability can not be ruled out.
(4) Tackle the stigmatization of IDUs

- As widespread stigmatization of psychoactive drug use is one of the impediments of HIV reduction efforts (Jarlais, 2009), a culturally appropriate program that would attempt to reduce stigmatization of IDUs should be considered. The issue may be approached by organizing a round table to include experts on drug use, NGO workers, religious leaders and community authorities. Their task would be to develop an action plan to sensitize local communities to illicit drug users’ health vulnerability. The plan should specify social marketing of HIV prevention and community mobilization.

(5) Prisons and Treatment Policies

- As demonstrated in this study, incarceration can not break the habit of drug abuse. In fact, a substantial number of IDUs continued to inject while in prison. If the long-term goal is to decrease the prevalence of IDU, a more comprehensive treatment policy should be developed and the current legal measures re-examined.

(6) Continue bio-behavioral HIV surveillance process among IDUs

- Surveillance surveys among IDUs should be continued at regular intervals (every 2-3 years) using comparable high-quality methodology, including probability sampling.
- Future surveillance surveys should also be used to monitor the proportion of IDUs reporting free access to condoms, sterile needles and syringes, as well as the exposure to targeted HIV interventions to be developed in the meantime. Although these surveys can not replace rigorous evaluation studies, they may provide some information (including cost-effectiveness) on the scope and efficiency of these new intervention programs.
- Small-scale qualitative studies should be carried out to explore the phenomenology of IDU in more detail. Of particular interest would be the analysis of costs and benefits of needle and syringe sharing, as well as an exploration of the specific meanings and beliefs that support such behaviors. In addition, a qualitative analysis of commercial sex involving IDUs is needed to explore other (“bridging”) routes for HIV infection.

List of References


**APPENDIX B – Study Questionnaire**

RDS study among injecting drug users in East Jerusalem, 2010

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**DEMOGRAPHIC CHARACTERISTICS**

First, I would like to ask you some questions regarding your life in general.

01. Which year you were born?

   [ ] years

02. Sex? (do not read the answers)

   1. Male
   2. Female

03. What is the highest level of education you completed?

   1. No formal education
   2. Some primary
   3. Primary
   4. Some secondary
   5. Secondary
   6. Some college
   7. College/university

04. Currently, are you:

   1. Married
   2. Divorced
   3. Widowed
   4. In a steady relationship
   5. Single

05. Where did you live most of the time during the last three months? (do not read the answers)

   ONLY ONE ANSWER!

   1. In your own house or apartment
   2. In a rented house or apartment
   3. In someone else’s house or apartment (of your relatives, friends)
   4. No permanent location (e.g., street, park, abandoned building)
   5. Prison
   6. Somewhere else (where?) ____________________________________________

06. What was the main source of your income during the last month?

   1. No income in the last month
   2. Permanent employment
   3. Temporary job/part-time job
   4. Family support
   5. Selling drugs
   6. Stealing and/or begging
   7. Something else (what?) ______________________________________________

07. How many injecting drug users who live in the East Jerusalem Governorate do you know by name (and they know you by name or nickname)?

   _________________________________________________________________

08. How many of them have you seen during the last three months?

   _________________________________________________________________

09. How many of those you saw were younger than 18?

   _________________________________________________________________

10. How many were older than 50?

    _________________________________________________________________

11. Who was the person who gave you the coupon to participate in this study?

    1. Friend
    2. Acquaintance
    3. Relative
    4. Stranger; never saw that person before

12. Why did you accept the coupon and came here? (Do not read the answers! ONLY ONE ANSWER)

    1. Because of money
    2. Because I want to be tested for HIV
    3. I want to be tested for Hepatitis
Now, I will ask you a few questions about drugs that you have injected so far.

18. Which drugs have you injected, ever?

<table>
<thead>
<tr>
<th>DRUG</th>
<th>YES (x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Heroin</td>
<td></td>
</tr>
<tr>
<td>2. Cocaine</td>
<td></td>
</tr>
<tr>
<td>3. Heroin and cocaine</td>
<td></td>
</tr>
<tr>
<td>4. Amphetamine</td>
<td></td>
</tr>
<tr>
<td>5. Morphine</td>
<td></td>
</tr>
<tr>
<td>6. Opium</td>
<td></td>
</tr>
<tr>
<td>7. Methadone</td>
<td></td>
</tr>
<tr>
<td>8. No answer</td>
<td></td>
</tr>
<tr>
<td>9. Don’t remember</td>
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</tbody>
</table>

19. Which of the above mentioned drugs did you inject most often in the last month?

20. Have you ever overdosed to the point of losing consciousness?

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<tbody>
<tr>
<td>1. Yes</td>
<td></td>
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<tr>
<td>2. No</td>
<td></td>
</tr>
<tr>
<td>3. Don’t remember</td>
<td></td>
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</tbody>
</table>

21. Have you ever been treated in a medical center for overdosing?

<p>| | |</p>
<table>
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<tbody>
<tr>
<td>1. Yes</td>
<td></td>
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<tr>
<td>2. No</td>
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<tr>
<td>3. Don’t remember</td>
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</tbody>
</table>

22. During the last week, from how many different people have you taken used needles and/or syringes to inject yourself with?

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<td>6.</td>
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<td>8.</td>
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<td>9.</td>
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</tbody>
</table>

23. Who were the people whose already used needles or syringes you have used for injection during the last year? (READ OPTIONS; MULTIPLE ANSWERS ARE POSSIBLE)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I did not inject with already used needles or syringes</td>
<td></td>
</tr>
<tr>
<td>2. Unknown person(s)</td>
<td></td>
</tr>
<tr>
<td>3. Friend(s) or acquaintance(s)</td>
<td></td>
</tr>
<tr>
<td>4. My sexual partner</td>
<td></td>
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<tr>
<td>5. Family member or a relative</td>
<td></td>
</tr>
</tbody>
</table>
6. Dealer
7. Other (who?)..................

24. The last time you injected drugs, did you use a sterile needle and syringe (i.e. the needle and syringe that no one used before you)?
   1. Yes
   2. No

25. The last time you injected drugs, did someone else use the needle and/or syringe that you have already used?
   1. Yes
   2. No

! If the answer was ,,NO“ (zero), skip the following question and go to question number 27.

26. During the last week, who were the persons who used the needles and/or syringes that you have already used for injecting yourself? (DO NOT READ ANSWERS; MULTIPLE ANSWERS ARE POSSIBLE)
   1. Unknown person(s)
   2. Friend(s) or acquaintance(s)
   3. My sexual partner
   4. Family member or a relative
   5. Dealer
   6. Other (who?)..................

27. The last time you shared injecting equipment, have you tried in any way to clean or disinfect the needle/syringe you used?
   1. Yes
   2. No

! If the answer was NO skip the following question and go to question number 29

28. How did you try to clean the needle/syringe? (DO NOT READ ANSWERS; MULTIPLE ANSWERS ARE POSSIBLE)
   1. With cold water
   2. With warm water
   3. With hot water
   4. With boiling water
   5. With soap or detergent

29. How often do you use sterile needle and syringe to inject drugs?
   1. Always (100%)
   2. Most of the time (75%)
   3. About every second time (50%)
   4. Sometimes (25%)
   5. Rarely (about 10%)
   6. Never or almost never

30. At which of the following places you obtained needles/syringes during the last month? (Multiple answers are allowed)

<table>
<thead>
<tr>
<th>Yes (x)</th>
<th>1 I buy them in a pharmacy or hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 I buy them in the street</td>
</tr>
<tr>
<td></td>
<td>3 I get them from a dealer</td>
</tr>
<tr>
<td></td>
<td>4 I get them from people I inject drugs with</td>
</tr>
<tr>
<td></td>
<td>5 I get them from friends or family members who are not drug users</td>
</tr>
<tr>
<td></td>
<td>6 I get them from a non-governmental organization</td>
</tr>
<tr>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

31. Do you know about any (non-governmental) organization that helps IDUs and provides information about HIV in your city?
   1. Yes
   2. No

! If NO skip the following questions and go to question number 34

32. Can you tell me the name of the organization? ____________________________
HIV Bio-Behavioral Survey among Injecting Drug Users in the East Jerusalem Governorate

33. Have you used their services during the last year?
   1. Yes
   2. No

**TREATMENT FOR DRUG ADDICTION**

34. Have you ever undertaken treatment that could help you reduce or quit consumption of drugs?
   1. Yes
   2. No

   ![If NO, go to section EXPERIENCE WITH POLICE AND PRISON]

35. How old were you when you went for the treatment (ASK ABOUT THE MOST RECENT TREATMENT IF PARTICIPANT REPORTED MULTIPLE TREATMENTS)?
   I was ______ years old.

36. What kind of treatment it was?
   1. Rehabilitation program run by an NGO
   2. Rehabilitation program in a medical treatment
   3. Rehabilitation treatment in prison
   4. Detoxication treatment by my family
   5. Self-help (tried by my own)
   6. Other (describe) ________________________________

**EXPERIENCE WITH THE POLICE AND PRISON**

Now, I would like to ask you about your experience with the police.

37. Have you ever been arrested for drug use?
   1. Yes
   2. No

38. Have you been arrested for drug use during the last year?
   1. Yes
   2. No

39. Have you ever been to prison?
   1. Yes
   2. No

40. Have you injected drugs during your prison time?
   1. Yes
   2. No
   3. No answer

**SEXUAL PRACTICES**

Now, I would like to ask you some questions about your sexual behavior.

41. How old were you when you had your first sexual intercourse (penis in vagina)? I was ________
   (IF PARTICIPANT DID NOT HAVE SUCH EXPERIENCE, ENTER "0")

42. With how many different people did you have sexual intercourse in the past 12 months?
   with __________ individuals

43. Have you had sexual intercourse in the last month?
   1. Yes
   2. No

   ![If NO, skip the next question and proceed to the SEXUAL PRACTICES section]

44. During the last month, have you used condoms each time you had sex?
   1. Yes
   2. No
   3. Don’t remember

45. Have you used condom the last time you had sexual intercourse?
   1. Yes
   2. No

46. Who was your partner at that last intercourse?
   1. Your regular partner (spouse, boyfriend/girlfriend)
   2. Casual (non-regular) partner
   3. Someone I paid to have sex with me
4. Someone who paid me to have sex with me

47. Does your regular sex partner (spouse or boy/girlfriend) inject drugs?
   1. Yes
   2. No
   3. No, but he/she used to inject

48. In the last month, did you have sexual intercourse with a non-regular (casual) partner who also injects drugs?
   1. Yes
   2. No

54. Did you use a condom the last time you had sex with a person who paid you (or gave you drugs) for sex?
   1. Yes
   2. No
   3. Don’t remember

55. During last year, did you pay someone for sex or gave them goods or drugs to have sex with you?
   1. Yes
   2. No

56. Did you use a condom the last time you had sex that you paid for (with money or drugs)?
   1. Yes
   2. No
   3. Don’t remember

SEXUALLY TRANSMITTED INFECTIONS AND HIV TESTING

57. In the last 12 months, have you been given free condoms (through an outreach service, drop-in centre or sexual health clinic...)?
   1. Yes
   2. No

58. During the last year, have you been diagnosed (a doctor told you that you are infected...) with a sexually transmitted disease (STD)?
   1. Yes
   2. No

SEX WORK

53. During the last year, did you have sex with somebody who paid you (or gave you drugs) for sex?
   1. Yes
   2. No

54. Did you use a condom the last time you had sex with a person who paid you (or gave you drugs) for sex?
   1. Yes
   2. No
   3. Don’t remember

55. During last year, did you pay someone for sex or gave them goods or drugs to have sex with you?
   1. Yes
   2. No

56. Did you use a condom the last time you had sex that you paid for (with money or drugs)?
   1. Yes
   2. No
   3. Don’t remember

SEXUALLY TRANSMITTED INFECTIONS AND HIV TESTING

57. In the last 12 months, have you been given free condoms (through an outreach service, drop-in centre or sexual health clinic...)?
   1. Yes
   2. No

58. During the last year, have you been diagnosed (a doctor told you that you are infected...) with a sexually transmitted disease (STD)?
   1. Yes
   2. No

SEX WORK
59. Were you medically treated for that infection (did you take prescribed medicine)?
   1. Yes
   2. No

60. Do you know where you can go if you wish to receive a free and anonymous HIV test?
   1. Yes
   2. No

61. Please name the place: ____________________________________________

62. Have you ever tested for HIV?
   1. Yes
   2. No

   ! If NO, go to the next section (HIV KNOWLEDGE)

63. Have you been tested for HIV in the last 12 months?
   1. Yes
   2. No

64. I don’t want to know the results, but did you receive the results of your most recent (if there were more than one) HIV test?
   1. Yes
   2. No

HIV KNOWLEDGE

Now, I will ask you a few questions about transmission of HIV.

65. Can having sex only with only and faithful uninfected partner reduce the risk of HIV transmission?
   1. Yes
   2. No
   3. I don’t know

66. Can using condoms reduce the risk of HIV transmission?
   1. Yes
   2. No
   3. I don’t know

67. Can HIV be transmitted by using a needle and/or syringe already used by somebody else?
   1. Yes
   2. No

   68. Can a healthy-looking person be infected with HIV?
       1. Yes
       2. No
       3. I don’t know

69. Can a person get HIV by using the same toilet with a person infected with HIV?
   1. Yes
   2. No
   3. I don’t know

70. Can a person get HIV by sharing a meal with someone who is infected?
   1. Yes
   2. No
   3. I don’t know

71. Can a person get HIV by sharing an already used needle or syringe which was washed in water before the next use?
   1. Yes
   2. No
   3. I don’t know

72. Thinking about the risk of getting infected with HIV, how much do you think you are exposed to this risk?
   1. I am not exposed to any risk
   2. The risk is small
   3. The risk is moderate
   4. The risk is substantial

Thank you very much for your time and participation.