Estimation of the Magnitude of People Who Inject Drugs in Hawassa, Ethiopia: A Descriptive Study

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Abstract

**Background:** - Injecting drug use contributes substantially to developing the HIV pandemic in many developing countries. Due to the hidden nature and stigma of the issue, it didn't prove easy to investigate using regular surveys. Therefore, this research pursues to determine the magnitude of individuals who inject drugs in Hawassa and explain the epidemiological and social condition of HIV among people who inject drugs.

**Methods:** - The study used rapid assessment methods and the combined method of estimating population, by nomination and multiplier methods, using two datasets. The first was the proportion of people who use service within a year as a multiplier. The second was a list of individuals with a condition who utilized a particular health service within a year as a benchmark. The rapid assessment included qualitative methods to extract information relevant to enumeration cites, selection of first seeds as data sources. The study made a simple description of the study subjects to yield socio-demographics and behaviours related to HIV and other health-related problems.

**Results:** - The study estimated a total of estimated 688 (95% CI; 502, 991) people who inject drugs, with a prevalence of 266 per 100,000 people. The study found that people who inject drugs were more young age, male gender. They also lived in lower educational status, were unmarried, and living in small clerk businesses. People who inject drugs and have taken part in the study were more likely to use additional substances like alcohol, khat, and other hard substances like cannabis. The most common form of drug used was Cocaine (83.3%). Most of the PWIDs were sexually active with regular (50.3%) and casual partners (884.6%). They claimed to involve in risky sexual behavior.

**Conclusion and recommendation:**- A significant number of people who inject drugs are available in Hawassa. Lack of assistance in harm reduction in the city has rendered PWIDs vulnerable and at greater risk for HIV/ AIDS. Therefore, the Ministry of Health and other relevant authorities have to start implementing the WHO’s nine key harm reduction measures provided by the World Health Organization.

Background

Injecting drug use contributes significantly to the spread of the HIV epidemic in many of the developed and developing worlds [1 – 3]. The exchange of injection needles among drug users is the primary mechanism for HIV transmission [4, 5]. It contributes significantly to the increased morbidity and mortality caused by drug use [2, 6]. HIV in persons who inject drugs is considerably more significant than in the general population (2, 3). Injecting drug use is also considered the leading cause of HIV worldwide, excluding Sub-Saharan African nations. In many resource-constrained countries, including Ethiopia, injecting drug use may be the second most common method of HIV transmission [1].

HIV risk behaviour is greater among women than among males who inject drugs [7]. In research by Magnus et al., in 2013 in Washington, DC, women who inject drugs showed higher HIV risk behaviours than males who inject drugs [8]. HIV prevalence is significantly greater among sex workers who inject
drugs than sex workers who don't use drugs [9, 10]. A substantially higher percentage of injecting drug users have HIV [1, 2, 11], hepatitis B, and C [11]. People who inject drugs are socially stigmatized and discriminated against in health and social care settings [12, 13]. People who inject drugs are prone to issues that are difficult to tolerate in a legal environment. They are engaged in many kinds of abuse and are regarded as readily apprehended criminals [14]. People who use drugs have no access to friendly healthcare and are more likely to share needles. The use of services by individuals who inject drugs decreases below the WHO's lower goal [17, 18].

Like other substance users, people who inject drugs are at higher risk for severe morbidity and mortality due to drug overdose [19–21]. Studies have indicated that heroin overdose is a significant cause of death among injectable drug users [19]. Users of injecting drugs are also more likely than the general population to suffer from common mental disorders [22, 23]. Experts may contextualize the findings of multiple approaches by combining the different estimate methods [24].

Injection drug research is further hampered by a lack of data on the number of individuals impacted and their geographic location over time. Although individuals who inject drugs in Ethiopia's main cities and towns are widely established, the number of people who do so is unknown. Therefore, this research aimed to evaluate the number of people who inject drugs in Addis Ababa and describe the epidemiological and social situation of HIV among people who inject drugs. Such data may help better focus on HIV prevention initiatives among injecting drug users [25, 26]. It is also essential for policymakers, service providers, and government health authorities to offer appropriate services without basic knowledge. The number of injectable drug users in a given demographic would help health authorities and community groups. It will help evaluate the coverage of current programs and plans and provide various public health services.

**Methods**

**Design and setting**

The study was carried out in two Ethiopian cities Addis Ababa [27] and Hawassa. According to the 2007 census, and projected to 2017, Ethiopia has a total population of 103.8 million. The majority of the population (86%) is known to live in a rural community. In terms of health and welfare, Ethiopia ranks among the world’s poorest nations, and agriculture is the backbone economy of the country. This report is a study finding from Hawassa, a capital city of the Southern Nations, Nationalities, and Peoples’ Region. Hawassa is located about 285 km south of Addis Ababa, on Lake Hawassa in the Great Rift Valley, with 258,808 people (for 2017). Hawassa lies on the Trans-African Highway extending from Cairo to Cape Town, and it is a city with a high tourist flow [28].

A rapid assessment technique was employed to supplement the combination approach that included the nomination and multiplier methods. The combination method had data collection from people who inject drugs. It used interviews and focus group discussions on enhancing the estimation of the population who inject drugs.
**Study population**

The source population for the study group was a mix of people linked to people who inject drugs. To estimate the number of injecting drugs, the source population was people who inject drugs, fulfilling the following inclusion criteria. A person who is at least 18 years old and uses an injection drug for non-medical purposes stayed in the study city for the last six months. The drug injection should be at least in the last three months was considered a case of people who inject a drug. Study subjects who fulfilled the above criteria and captured by the respondent-driven sampling method were further assessed for using injection drugs by confirmatory checklists. The confirmatory inventory included; 1) Knowledge of proper place of injection site on the body; 2) Knowledge of place of finding the injection rigs; 3) Knowledge of the size of syringe and needle and on how it is injected 4) Assessing scar of the point of the last injection on the body. During the assessment time, if the subjects’ responses suggested the presence or lack of familiarity, eligibility was made to be assessed by a coordinator who has a high understanding of people who inject drugs.

The respondent-driven sampling (RDS) approach included people who inject drugs for a face-to-face interview until a saturation time was achieved. Respondent-driven sampling is a kind of chain referral sampling that uses peers to attract participants. RDS may give relative estimates typical of the networks of the populations studied when properly implemented and evaluated [29, 30]. Injecting drug users, syringe suppliers, and individuals trying to minimize the issue were among the people who contributed to the rapid situational evaluation. It also included health providers, networks of governmental and non-governmental organizations (NGOs) that deal with drug users.

**Sampling and recruitment**

The sample size determination was not made in evaluating a research topic since the study approached the entire population of people who inject drugs. However, maximizing inclusion in the study of people who inject drugs is necessary. In the combined methods, for the nomination and multiplier methods, all people who inject drugs and are captured by the respondent-driven sampling in the given time were included. Using the respondent-driven sampling approach, three persons who inject drugs were selected in each enumeration site. The three recruiters who agreed with the rapid evaluation were considered seed recruits representing various individuals who inject drugs. Each seed was personally informed about the study’s goals and incentives to attract three eligible volunteers. Each source received three coupons after registering and answering the behavioural questions.

The coupon is helpful to recruit other peers with the same seed behaviour as the first wave of recruitment. The second wave of recruitment was people who inject drugs, which come with a recruitment coupon provided by recruits included in the first recruitment trend. Each recruit in succeeding instructions was interviewed to estimate questions related to behaviours and distribution of the problem in PWIDs. All recruits were given three coupons favorably advised to recruit other peers who inject drugs. The successive recruitment trend was ensured in long recruitment chains of people who inject drugs. It went
on until it was impossible to locate PWID recruits. The research participants’ recruitment was tracked using the unique number-coded coupons given on each participant’s recruiting vouchers.

**Data collection process**

Participants were further questioned by asking two questions for the main objective: to estimate the population and prevalence of individuals who inject drugs using the nomination technique. The questions were, broadly, of the following two sorts of questions: 1) ‘How many friends do you have that have used drugs regularly in the past year?’ 2) ‘How many of these, you know, received treatment for drug-related problems at the specific health facilities in the past year.’ The multiplier was calculated using these two responses as an estimator for health facilities. Finally, as a benchmark, the multiplier was multiplied by the total number of PWIDs served at the chosen health institutions that utilized the previous year’s service.

The research group assessed the number of people who used treatment facilities due to drug use problems during a year to set the benchmark for the city. The total number of PWIDs was counted using data extracted from the logbooks of a hospital and a health center in Hawassa and serve as a benchmark. Multiplying the two sets estimates the likely size of the population who inject drugs in the city. During data collection, descriptive information was gathered from research participants identified during the evaluation.

Within each enumeration site, two data collectors having data collection experience were assigned for a face-to-face interview. Unique identifiers, socio-demographic data, the kind of drugs injected (with frequency and recency), and the geographical and social locations of injecting drug users are all included in a questionnaire (village level). Safety and how to approach individuals who inject drugs were taught to the data collectors. The researcher’s group educated data collectors about counseling services, giving a coupon for cases, safety, ethical problems, and the contents of the questionnaire because of its sensitive nature. Repeated data collection of eligible research participants was avoided with extreme care. The questionnaire was translated into the local language and tested in a comparable environment. The researchers have compensated the study subjects for their travel expenses and the cost of bringing three PWIDs to the research.

**Data analysis**

Data were collected to estimate the number of people who inject drugs into a computer using an EPI-DATA version 3.0 software package. A double-entry scheme was employed using a programmed entry template, having a unique identity and validation daily. Data analysis was done based on the objectives of the study. In addition, descriptive analysis was made to assess demographic characteristics and assess some problems encountered among people who inject drugs. For estimating individuals who inject drugs, both the multiplier and nomination approaches utilized data from two independent sources to evaluate the overlaps between the two sources. The first input was a count of PWIDs from the abstracted logbook handled in the past year from two health facilities in Hawassa as a benchmark. The
second source was the percentage of PWIDs. They were deemed to utilize the health facilities in Hawassa in the past year.

The total number of PWIDs utilizing the health facilities was divided by the multiplier to determine the overall number of individuals who inject drugs using either nomination or multiplier approaches. Thus, the total number of PWIDs using the health facilities, although called the benchmark, is similar for each scenario. The difference lies in the estimate of the multiplier. Furthermore, the 95% CI of the multiplier was produced by calculating the 95 percent confidence level and considering the entire sample’s multiplier [27].

The multipliers were pooled estimate, computed with the fixed model effect, giving weight to the size of individuals in the survey [multiplier technique]. Participants in the research knew the total number of nominations PWIDs to synthesize a single estimate

Results

The study comprised 150 people who inject drugs regularly. Almost three-quarters of the respondents are under 35 years, with a mean age of 28.4 ± 8.0 years, ranging from 18 to 52 years. The majority, nearly nine of the ten research subjects, were males, and over 60% did not complete an elementary school. Only approximately 15% are married and live with their families. Although minor clerical jobs predominated, many study participants were students in high school and universities (Table 1).

Almost 70% of PWIDs used alcohol regularly, with more than three-quarters chewing khat and 37% using hard non-injection drugs daily. However, only a few participants stated that they had not used alcohol, chewed khat, or used other non-injectable hard drugs in the past 12 months (table 2).

About 44% of the research respondents began using injectable drugs in their adolescence. In comparison, more than 87% started using injectable medications when they were under 30 years. More than one-fifth of the research respondents said their last injection was within 24 hours to a week of the interview, while 14% of PWIDs said they used the drug 2-3 times each day. One in nine said it was within a week to a month (table 3).

Cocaine, Heroin, and Morphine are the most often utilized substances among study subjects. Cocaine was the most frequently used substance, followed by Heroin. Almost one in every six people was using two or more substances. Drugs for injection can be obtained through friends, unique shops, smuggled contrabands, and ordinary stores. The average daily medication price and single injection episode prices were USD 5.68 ± 3.77 and USD 3.62 ± 2.33 (Table 4).

The study used nomination and multiplier techniques to estimate the number of persons who inject drugs. As a baseline, the study used the number of PWDs who visited one hospital and two health facilities in Hawassa. In 2017, 232 persons who inject drugs were identified to be in treatment for a condition related to injectable substance use. In this survey, only 65.7% of PWIDs attended a health
facility once in the previous 12 months. Given that the PWIDs represent the PWID population, the accurate benchmark for the research region will be 152 PWIDs (Table 5).

According to the study findings, using the nomination technique, the multiplier for visiting health facilities in Hawassa was 4.5789. The study predicted a total of 696; 95% CI, (624, 786) persons who inject drugs based on nominations for utilizing health services. The pooled estimate using a fixed-effects model found a total of 688 (95% CI; (502, 991) adult injecting drug users were available in Hawassa. Therefore, the prevalence of injection drug use in the town is estimated at 266 per 100,000 people.

The majority of research respondents from Hawassa, 104 (69.8 percent), had the practice of using a reused needle. Almost one in five of the study subjects reported sharing syringes and needles once, twice, or more times. Furthermore, research respondents admitted to sharing a needle with many persons, ranging from one to three and four or more people. However, some of them were unknown to the study subjects (Table 6).

More than 90% of PWIDs reported to be continuously sexually active, and more than three-quarters of research respondents had two or more frequent sexual partners in the previous 12 months. The bulk, over 70% of the research respondents, began sexual intercourse in their adolescence, with fewer than half now having no regular partner. Moreover, 30 percent of the research respondents who have a regular sexual partner take injectable medications. Significantly, more respondents with a regular partner do not wear a condom during sexual intercourse. Moreover, four out of every five study participants who had sexual intercourse in the previous 12 months said they had intercourse with two or more casual sexual partners.

Discussion

According to the survey, Hawassa has 688 (95 percent CI; 502, 991) persons who inject drugs. The estimate, with a prevalence of 266 per 100,000 people, the estimate providing is greater than the estimate given in Addis Abeba, which had a prevalence of 87 per 100,000 population [27]. However, both studies were undertaken simultaneously and are the first in Ethiopia. Judging the finding is overestimation or underestimation may be difficult. However, touching methodological challenges estimating the magnitude of people who inject drugs may be necessary. Our data were planned from a health provider and police detention register as a benchmark. However, getting information only from a health provider may have hindered us from showing worthy similarities and discrepancies. However, this estimate sought to employ the nomination and multiplier techniques and a pooled assessment of the two calculations and their confidence bounds, resulting in a proxy measure of PWIDs in the city. A fixed-effects approach of pooling the multiplier and establishing a small confidence limit in measuring the pooled estimate may underestimate the number of individuals who inject the substance in cities. Another problem that may not be addressed here is the difficulty of representing PWIDs from the wealthy community. Such a group of eligible persons may not be evaluated using respondent-driven sampling for the lower incentive.
According to the research, people who inject drugs are more likely to be young, male, having a lower educational level. They are also single and work in a small clerical company. In addition, they were more likely to use additional substances like alcohol, khat, and other hard substances like cannabis and use the substance in a more frequent pattern.

These findings are consistent with the Addis Abeba research [27]. It may be attributed to the fact that young individuals are prone to risk-taking behaviors. In developing cities with many young people, finding more of these sorts of persons who inject drugs is expected. As a result of the skewness of discovering more young people, our statistics indicating young people's dominance. Numerous research supports the notion that more young individuals are susceptible to drugs, as evidenced by worldwide facts about youth [31, 32]. Similarly, as numerous researches have shown, males are the main substance abusers. Consequently, many scholars agree that men make up a greater population than women [33, 34].

Our study has also found a higher proportion of people to live in a lower educational level working in a small clerk business. However, the survey showed the presence of people from all levels of education. This fact may be due to a higher level of uneducated people in the city, as in the census [35]. The inclusion of people with a lower level of education could be related to a lack of knowledge that initiates injection drug use, resulting in the addiction to the problem. Such a problem is also seen in other studies [35, 36]. The study also included PWIDs that live non-married. It may be because they are unable to marry. After all, they have such a condition or may already be divorced and choose not to reveal their marital status to avoid shame [37].

A higher proportion of study subjects in this study started injection drugs at a lower age below 20 years. It disclosed to use injectable drugs more frequently, and the majority are taking injection drugs at least once per week. Of course, PWIDs may initiate injection drug use at a younger age. It may be the behaviour of most young age taking high-risk acts when they are encouraged by their peers. The dominance of substance use, particularly injection drug use, initiated among the youth is an international phenomenon supported by many researchers [38–40]. The majority of the PWIDs were using injection drugs more frequently, at least once per week. It could be due to the chronicity of the substance to use more frequently.

Heroin was the most often utilized type of drug in the city. The dominance of one or two pills in a community may be due to the clustering effect of living in common localities. Although most PWIDs inject a single form of the drug, some PWIDs take two or more drugs. Finding drugs from friends was the primary source of drugs for PWIDs. Because of the covert nature of drug use, users may have been reliant on a small group of individuals, with friends being the first to come to mind. Friends may also be the first people who initiated such substances as the nearby trainers. Of course, PWIDs also illustrated the drugs found in special-shops nearby or found after it is smuggled. The drug is expensive and could disrupt family life, and it demonstrates that some PWIDs leave their jobs, sell their cars and houses. They also get divorced or separated from their marriage and leave their family dispersed in the streets [41, 42].
In the study, only a few study subjects disclosed sharing needles and syringes in common. People who inject drugs always buy and use drugs in common. As with sharing needles and syringes, it is necessary to transfer the small and costly medication to reduce the minor loss incurred at the individual level. PWIDs also said that they shared an injection as a symbol of camaraderie and friendliness.

Although the study may have some strength related to giving a baseline for future studies related to PWIDs, it is not immune to common limitations. As injection drugs are taboo to disclose openly in public, the study may have underestimated people who may be traditionally acquainted with the culture. Moreover, study subjects who considered the transport incentive as worthy payment may be included, resulting in underestimation due to excluding the wealthy once. The recording system in health facilities that may not be included in the roaster for people who inject drugs may change the benchmark number, resulting in underestimating. However, the study has tried to assess all health facilities’ roasters by using different diagnostic terminologies.

**Conclusion**

The study estimated a total of 688 (95 percent CI; 502, 991) persons who inject drugs, making the prevalence of 266 per 100,000 people. Such a significantly higher number of people should click policymakers in major cities to consider the growing number of PWIDs. The youth is the most vulnerable population for injection drug use. Thus, the government should assess and initiate robust prevention strategies for intuitions with a higher proportion of youth, like the schools [elementary, secondary, and tertiary level]. Cocaine and Heroin are the most commonly used drugs in Hawassa, and they may be partially cured with opioid replacement treatment. As a result, the city should begin and execute the replacement treatment.

**Abbreviations**

AIDS
Human Immunodeficiency Syndrome; HIV = Human Immunodeficiency Virus; PWID = People Who Inject Drugs;

**Declarations**

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**Authors’ contributions**

ND wrote the text, reviewed and approved the final version. The manuscript was contributed by BS, AA, and BM, who also reviewed and approved the final version. The other authors examined and approved the
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ND is a professor of epidemiology at Addis Ababa University’s School of Public Health’s Department of Preventive Medicine, specializing in “Substance Abuse Research.”

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Availability of data and materials

Requesting ND gives you access to all of the data and resources you need.

Ethics approval and consent to participate

The Ethiopian Public Health Intuition ethics committee of the Federal Ministry of Health approved the research with reference number 6-13/327 written on June 14, 2017. Permission was acquired from the ethical committees of the Addis Ababa Health Bureau and the Southern Nations, Nationalities, and Peoples Health Bureaus based on the college's ethical clearance. Because the research topic is so sensitive that it may create ethical concerns, every effort was made to develop the questionnaire and recruit and train enumerators. Participants were given information about the study's goal and were given the option to opt-out. They were further informed that they are free to withdraw from the study at any time during the survey process. They were also told that they might answer or reject any inquiry. Each participant in the research and the leaders of participating institutions gave their informed permission. Participants who sought assistance were given information about where they might obtain help and should be referred. Throughout the research, strict secrecy and privacy were maintained, and identifiers were omitted. On the questionnaire, only codes were retained. Questionnaires and notes from interviews were stored in a safe place after data collection. When they had any concerns about the survey or felt they might be harmed or mistreated due to their participation, all respondents were given the name, phone number, and email of the principal investigator.
Competing interests

The authors state the absence of competing interests.

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Tables

Table I. Sociodemographic characteristics of people who inject drugs in Addis Ababa and Hawassa Cities, July 2021
| Characteristics          | Hawassa | Hawassa |
|-------------------------|---------|---------|
|                         | # (%)   | # (%)   |
| Age group               |         |         |
| Less than 25            | 57      | 38.0    |
| 25-34                   | 59      | 39.3    |
| 35-44                   | 28      | 18.7    |
| 45+                     | 6       | 4.0     |
| Mean ± SD               | 28.4 ± 8.0 |         |
| Range                   | 18 to 52|         |
| Sex                     |         |         |
| Male                    | 137     | 91.3    |
| Female                  | 13      | 8.7     |
| Educational status      |         |         |
| Elementary              | 91      | 60.7    |
| Secondary               | 45      | 30.0    |
| Tertiary                | 14      | 9.3     |
| Marital status          |         |         |
| Single                  | 105     | 70.0    |
| Married                 | 22      | 14.7    |
| Divo/Wid/Sepa           | 23      | 15.3    |
| Religion                |         |         |
| Orthodox                | 90      | 60.0    |
| Muslim                  | 20      | 13.3    |
| Protestant              | 26      | 17.3    |
| Others                  | 14      | 9.3     |
| Occupation              |         |         |
| No Job                  | 34      | 22.7    |
| Students                | 20      | 13.3    |
| Employed(gov/ NGO)      | 28      | 18.7    |
| Self-employed           | 26      | 17.3    |
| Substance                        | Frequency | Percent |
|---------------------------------|-----------|---------|
| Alcohol                         |           |         |
| Daily                           | 106       | 70.7    |
| 1-2 times a week                 | 27        | 18.0    |
| Rarely                           | 15        | 10.0    |
| Never drink                      | 2         | 1.3     |
| Khat                            |           |         |
| Daily                           | 115       | 76.7    |
| 1-2 times a week                 | 23        | 15.3    |
| Rarely                           | 9         | 6.0     |
| Never chew                       | 3         | 2.0     |
| Hard (non-injectable) substance  |           |         |
| Daily                           | 56        | 37.3    |
| 1-2 times a week                 | 69        | 46.0    |
| Rarely                           | 25        | 16.7    |
| Never drink                      | =         | =       |

Table 2. The pattern of people who inject drugs on the use of other substances in Hawassa, July 2021
Table 3. Characteristics of drugs used for injection and process of its use by people who inject drugs substances in Hawassa, July 2021

| Characteristics               | Frequency | Percent |
|-------------------------------|-----------|---------|
| Age at first injection        |           |         |
| Below 20 years                | 66        | 44.0    |
| 20-29 years                   | 65        | 43.3    |
| 30 years or more              | 19        | 12.7    |
| Mean ± SD                     | 22.0 ± 5.7|         |
| The last injection            |           |         |
| Today/ yesterday              | 7         | 4.7     |
| Within a week                 | 22        | 14.7    |
| Within a month                | 49        | 32.7    |
| Within 2-3 months             | 72        | 48.0    |
| Frequency of injection        |           |         |
| Daily to 2-3 per day          | 11        | 14.1    |
| Once a week to a month        | 60        | 76.9    |
| Less frequent (>3 months)     | 7         | 9.0     |

Table 4. Characteristics of commonly used drugs in the past 12 months by people who inject drugs substances in Hawassa, July 2021
| Drug          | Frequency | Percent |
|--------------|-----------|---------|
| Heroin       | 17        | 11.3    |
| Cocaine      | 125       | 83.3    |
| Pethidine    | 5         | 3.3     |
| Crack        | 8         | 5.3     |
| Morphine     | 9         | 6.0     |
| Ecstasy      | =         | =       |
| Tramadol     | 7         | 4.7     |
| Others       | 6         | 4.0     |
| Number of type of drugs |         |         |
| Only one     | 126       | 84.0    |
| Two drugs    | 23        | 15.3    |
| Three or more| 1         | 0.7     |
| Place where a drug is found |    |         |
| From friend  | 113       | 75.3    |
| Special shop | 21        | 14.0    |
| Smuggled from contraband | 4       | 2.7     |
| From Pharmacy/ drug shop | 1               | 0.7     |
| Non-Gover. Health facility | 6          | 4.0     |
| From ordinary shop | 11         | 7.3     |

| USD          | 1$ = 21.0 Birr, in 2017 |
|--------------|-------------------------|
| Average daily Price (Eth. Birr) | 5.68 ± 3.77 |
| Price of drugs used on the last day | 4.77 ± 2.95 |
| Price for a single injection | 3.62 ± 2.33 |
| Price of a single injection of the last time | 3.78 ± 2.67 |
Table 5. Number of PWIDs and their friends who visited health facility or imprisonment due to their drug use habit, for population estimation using Nomination/ Multipliers, in Hawassa, July 2021

| Types of PWID                                             | Number | Multiplier | Benchmark | Estimated Population | 95% Confidence level of estimate |
|-----------------------------------------------------------|--------|------------|-----------|----------------------|----------------------------------|
| **Notification method**                                   |        |            |           |                      |                                  |
| Number of friends of the participant has                  | 1044   |            |           |                      |                                  |
| Number of friends attending health facilities             | 228    | 4.5789     | 152       | 696                  | (624, 786)                       |
| **Multiplier method**                                     |        |            |           |                      |                                  |
| Number of PWIDs contacted                                 | 149    |            |           |                      |                                  |
| Number of PWIDs who uses health facility in 12 months     | 35     | 4.2571     | 152       | 647                  | (502, 911)                       |
| **The overall total estimate**                            | 4.52714| 152        | 688       |                      | (502, 991)                       |

Table 6. Characteristics and pattern of using syringe and needle by people who inject drugs in Hawassa, July 2021
| Syringe and needle use pattern                                    | Frequency | Percent |
|------------------------------------------------------------------|-----------|---------|
| Usage of new syringe and needle for the last injection            |           |         |
| Yes                                                              | 104       | 69.8    |
| No                                                               | 45        | 30.2    |
| Frequency of using previously used syringe/ needle                |           |         |
| Never shared                                                      | 120       | 80.5    |
| One or two times                                                  | 12        | 8.1     |
| Three or more times                                               | 17        | 11.4    |
| Number of people who used syringe in common                       |           |         |
| One to 3 other people                                            | 7         | 24.1    |
| Four or more people                                              | 22        | 75.9    |
| Number of new people who shared syringe                           |           |         |
| No one                                                           | 2         | 6.9     |
| One to two                                                        | 20        | 69.0    |
| Three or more people                                             | 7         | 24.1    |

Table 7. Reproductive and sexual behaviour by people who inject drugs in Hawassa, July 2021
| Sexual pattern                                      | Frequency | Per cent |
|----------------------------------------------------|-----------|----------|
| Ever had sexual intercourse                        |           |          |
| Yes, in the last 12 Months                         | 139 (93.3)| 139 (93.3)|
| Yes, before 12 months                              | 1 (0.7)   | 1 (0.7)  |
| Never                                              | 9 (6.0)   | 9 (6.0)  |
| Number of regular partner (last year)              |           |          |
| Only one                                           | 33 (23.7) | 33 (23.7)|
| Two to three                                       | 37 (26.6) | 37 (26.6)|
| Four or more partner                               | 69 (49.6) | 69 (49.6)|
| Age at first sex                                   |           |          |
| Before 18 years                                    | 54 (38.8) | 54 (38.8)|
| 18 to 19 years                                     | 41 (29.5) | 41 (29.5)|
| 20 year or more                                    | 44 (31.7) | 44 (31.7)|
| Presence of regular partner                        |           |          |
| Yes                                                | 81 (57.9) | 81 (57.9)|
| No                                                 | 59 (42.1) | 59 (42.1)|
| Regular partner uses injection drug                |           |          |
| Yes                                                | 24 (30.0) | 24 (30.0)|
| No                                                 | 56 (70.0) | 56 (70.0)|
| Condom use with regular partner                    |           |          |
| Yes                                                | 62 (76.5) | 62 (76.5)|
| No                                                 | 18 (22.2) | 18 (22.2)|
| Number of casual partner last 12 months            |           |          |
| Only one                                           | 14 (15.4) | 14 (15.4)|
| Two to three                                       | 29 (31.9) | 29 (31.9)|
| Four or more partner                               | 48 (52.7) | 48 (52.7)|
| Condom use Last time (casual partner)              |           |          |
| Yes                                                | 77 (58.3) | 77 (58.3)|
| No                                                 | 50 (37.9) | 50 (37.9)|
| Don't' know | 5 (3.8) | 5 (3.8) |
|---|---|---|
| Pattern of Condom use (casual partner) | | |
| Consistent use | 86 (75.4) | 86 (75.4) |
| Partial use | 14 (12.3) | 14 (12.3) |
| Never Use | 14 (12.3) | 14 (12.3) |
| Ever sexual intercourse (CSWs) | | |
| Yes, in the last 12 months | 59 (42.1) | 59 (42.1) |
| Yes before 12 months | 12 (8.6) | 12 (8.6) |
| No | 69 (49.3) | 69 (49.3) |
| Number of sexual worker partners | | |
| One to two partners | 26 (45.6) | 26 (45.6) |
| Three or more partners | 31 (54.4) | 31 (54.4) |
| Age at first sex with CSW | | |
| Before 18 years | 22 (31.0) | 22 (31.0) |
| 18 to 19 years | 19 (26.8) | 19 (26.8) |
| 20 year or more | 30 (42.3) | 30 (42.3) |

**Figures**

**Figure 1**

A sample coupon informing the study subject and given an identity number