

# Prevalencia de VIH y sus factores asociados en personas que se inyectan drogas atendidos en una institución prestadora de servicios de salud de Medellín-Colombia

## *HIV prevalence and associated factors in people who inject drugs attended in an institution that provides health services from Medellín-Colombia*

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Atehortúa-Tobón Ana María <sup>a</sup>, Palacio-Monsalve Geraldine <sup>b</sup>, Bohórquez-Chacón María Camila <sup>c</sup>,  
Álvarez-Henao Geraldine <sup>d</sup>, Cardona-Arias Jaiberth Antonio <sup>e</sup>

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- a. Microbiology and bioanalysis student. Biosaludable Drugstore. ORCID: <https://orcid.org/0000-0002-6467-3947>
- b. Microbiology and bioanalysis student. Universidad de Antioquia ORCID: <https://orcid.org/0000-0001-8860-2046>
- c. Microbiology and bioanalysis student. LikeU Colombia ORCID: <https://orcid.org/0000-0002-7234-684X>
- d. Microbiology and bioanalysis student. Administrative Assistant. ORCID: <https://orcid.org/0000-0003-0352-0434>
- e. Microbiologist, MS Epidemiology, MS Applied economics, Universidad de Antioquia. ORCID: <https://orcid.org/0000-0002-7101-929X>

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### **Abstract**

**Introduction:** In Colombia, research on HIV in people who inject drugs (PID) is scarce, despite being a key group for infection control.

**Objective:** To determine the prevalence of HIV and its associated factors in PID treated in a health service provider institution (IPS) in Medellín-Colombia.

**Methods:** Prevalence study in 293 PID from an IPS specialized in the care of infectious diseases. A survey was applied to collect sociodemographic and health data, immunochromatography for infection screening, and positive cases were confirmed with Western blot. Analyzes were performed in SPSS 27.0.

**Results:** The median age was 29 years, 84% men, 52% without schooling and high frequency of sexual risk factors. HIV prevalence was 5.5%, of these 87.5% co-infected with hepatitis C virus and 53.6% with hepatitis B virus.

HIV prevalence was statistically higher in subjects older than 29 years of age (10.4%), those who live on the streets (25.5%), without schooling (9.9%) and those who receive money or drugs in exchange for sex (11.6%).

**Conclusion:** A higher prevalence of HIV was obtained in comparison with previous studies of the city; a high proportion of co-infection with hepatitis B and C viruses, and groups with a higher occurrence of HIV were identified. These results, in addition to providing a baseline to evaluate subsequent interventions in this group, demonstrate the intersectionality in the risk of HIV, injecting drug use, viral hepatitis, low schooling, homelessness, and others social and health conditions, that show the clinical, epidemiological and social complexity to impacting HIV in this group.

**Keywords:** HIV; Prevalence; Risk factors; drug users; Intravenous substance abuse.

### Resumen

**Introducción:** En Colombia, la investigación sobre el VIH en Personas que se Inyectan Drogas (PID) es escaso, pese a ser un grupo clave para el control de la infección.

**Objetivo:** Determinar la prevalencia de VIH y sus factores asociados en PID atendidos en una Institución Prestadora de Servicios de salud (IPS) de Medellín-Colombia.

**Métodos:** Estudio de prevalencia en 293 PID en una IPS especializada en la atención de enfermedades infecciosas. Se aplicó una encuesta para recolectar datos sociodemográficos y de salud, una inmunocromatografía para la tamización de la infección y los casos positivos se confirmaron con Western blot. Los análisis se realizaron en SPSS 27.0.

**Resultados:** La edad mediana 29 años, 84% hombres, 52% sin escolaridad y alta frecuencia de factores de riesgo sexual. La prevalencia del VIH fue de 5,5%, de estos 87,5% coinfectados con virus de la hepatitis C y 53,6% con la B. La prevalencia de VIH fue estadísticamente más elevada en sujetos mayores de 29 años de edad (10,4%), quienes viven en condición de calle (25,5%), sin escolaridad (9,9%) y quienes reciben dinero o drogas a cambio de sexo (11,6%).

**Conclusión:** Se obtuvo una prevalencia de VIH mayor a la reportada en estudios previos de la ciudad, alta proporción de coinfección con virus de las hepatitis B y C, y se identificaron grupos con mayor ocurrencia de VIH. Estos resultados, además de permitir disponer de una línea base para evaluar intervenciones posteriores en este grupo, demuestra la interseccionalidad en el

riesgo de VIH, consumo de drogas inyectables, hepatitis virales, baja escolaridad, condición de calle, y otros que muestran la complejidad clínica, epidemiológica y social para impactar el VIH en este grupo.

**Palabras clave:** VIH; Prevalencia; Factores de riesgo; Consumidores de drogas; Abuso de sustancias por vía intravenosa.

### 1. Introduction

The human immunodeficiency virus (HIV) is a retrovirus that attacks the immune system, causing the person to become immunodeficient and thus, may suffer from various clinical manifestations, ranging from fever, weight loss and vomiting, to serious effects such as neurological problems, increased risk of cardiovascular disease, squamous cell anal cancer, intraepithelial anal dysplasia; infectious processes such as varicella-zoster, papilloma virus, disseminated molluscum contagiosum, bacterial folliculitis and dermatophytosis; in addition to clinical conditions such as pneumonia, encephalopathy, Kaposi's sarcoma, among other AIDS-defining events; covering a whole clinical spectrum from asymptomatic cases to death (1, 3).

In epidemiological terms, the UN in 2020 reported 37.7 million people with HIV worldwide and 680,000 deaths (4). Data for Colombia for the same year reported 123,490 cases, of which 94,879 were men (76.83%), 28,593 women (23.15%) and 18 intersex (0.01%); with the highest proportion of cases in Bogota (22.54%), Antioquia (17.4%) and Valle del Cauca (12.87%). In turn, it was reported that 42.5% of people living with HIV in the country belonged to a key population (5).

In Colombia, men who have sex with men are considered key groups for HIV, with the highest percentage of cases in the country in 2020 with 39.7%, non-injecting psychoactive substance users with 2.9%, homeless people 0.4%, transgender men 0.3%, transgender women 0.2%, people deprived of liberty 0.2%, sex workers 0.2% and people who inject drugs 0.1%. The risk of infection of People who Inject Drugs (PWID) is very high and despite the fact that they are the group with the least reported infections in the country, a significant increase in cases between 2019 and 2020 was evidenced, to which would be added possible underreporting of cases or underestimation of the specific prevalence in this group due to difficulties in capturing subjects of the PWID. This fact would highlight to some extent, health care problems for this group or inefficiency of the few programs available in the country for the detection and prevention of cases in this population (5).

Previous studies, through systematic review, have shown that injecting

drug use is a risk factor for acquiring HIV and increasing its prevalence (6). For example, in three Ukrainian cities in the years 2012-2013, a study with 550 PWID found an HIV prevalence of 39%, being higher in those with higher frequency of drug use (per month and times per day) (7). In addition, globally, 11-21 million PWID have been estimated with 0.8 to 6.6 million positive for HIV (8), and a systematic review demonstrated the presence of HIV in PWID in 120 countries, highlighting five with prevalence between 20 and 40%, and nine with a ratio of infection greater than 40% (9).

In addition to the magnitude of infection, different factors associated with infection in this group have also been identified, such as unsafe injection practices, unprotected sex, sharing injection equipment and lack of biosafety education. In this regard, a study conducted in Medellín and Pereira indicated that the reason for sharing injection equipment is not precisely because of lack of money, but because of a lack of awareness of the risk of infection. This study also found that 40% of PWID share their equipment, which is cleaned with water at each change (1). In addition, other reports have shown the concentration of HIV cases in PWID in men, young people, lower socioeconomic levels, those involved in street vending, and those with risky sexual practices (11).

In relation to similar research in Colombia, a study conducted in Medellín and Pereira with 534 PWID found an HIV prevalence of 3.8% and 1.9% respectively, predominantly in men, under 31 years of age and socioeconomic levels 1 and 2 (10). In Armenia, a study was conducted with 265 PWID where the HIV prevalence in men was 2.7% and 2.9% in women, 67.5% with more than two years using drugs by this method and 35% reported having shared needles and syringes (11) (12). In another study conducted in 6 cities in Colombia with 1,464 PWID, the following prevalence were found: in Bogotá 3.8%, Medellín 2.7%, Armenia 2.2%, Cali 1.9% and the rest of the country 3.0%. Although most PWID in this study throw the syringe in a wastebasket after use or keep it for reuse, it is also common for them to share their syringes with other PWID. Medellín and Bogota had the highest percentage of people who have difficulty accessing health services (11).

The above shows that in Colombia there are very few investigations on HIV in PWID, the results of the few studies available cannot be applied or

*«To determine the prevalence of HIV and its associated factors in PID treated in a health service provider institution (IPS) in Medellín-Colombia.»*



inferred to institutionalized or specific populations of a Health Service Provider Institution (IPS) and in general, it is necessary to increase studies on HIV in this group given the high probability of transmitting the infection parenterally. Therefore, the objective of this research was to determine the prevalence of HIV and its associated factors in PWID treated in a health care institution in Medellín.

## 2. Methods

**Type of study:** Cross-sectional descriptive.

**Subjects of study:** 293 PWID who were screened and confirmed (positive) for HIV infection at the Fundación Antioqueña de Infectología (FAI), a Health Services Provider Institution with its main office in Medellín, which focuses on infectious diseases. All subjects who attended the FAI during 2019 were included; therefore, no sample size or sampling was calculated. Subjects aged 18 years or older, belonging to PWID according to self-report, who voluntarily participated in an FAI health education program and signed the informed consent form. No subjects who met the above inclusion criteria were excluded.

**Data collection:** A survey with sociodemographic data, perceived morbidity, sexual risk factors and co-infection with hepatitis B and C viruses was applied. For HIV screening, the **BIOLINE HIV1-/2 SD** test was used for IgG, IgM, and IgA antibodies against gp41 and p24 antigens (HIV-1), as well as gp36 (HIV-2), with a sensitivity of 100% and specificity of 99.7%. Confirmation of infection was performed with Western Blot. For **HCV, SD BIOLONE HCV**, an immunochromatography with recombinant antigens for Core, NS3, NS4 and NS5 proteins was used, with 100% sensitivity and 99.4% specificity. For the HBV OnSite HBsAg Combo which has a sensitivity and specificity of 100%.

An FAI performing arts team conducted initial fieldwork to motivate potential study participants. A general physician from the FAI then consulted each person interested in the study, presented the general objectives of the study, conducted pre-test counseling and, if the subject agreed to participate, explained, and gave the informed consent form; subsequently, an assistant filled out the survey. A sample was taken for the clinical laboratory, and when the results were obtained, a personalized delivery was made. A FAI employee filled out the Excel database anonymously, assigning a code number to each participant.

Information bias control was performed with standardization of the health professionals who applied the survey and the clinical data of the positive sub-

jects, validation of the appearance for the survey, high diagnostic validity of the screening tests, application of the laboratory tests according to the recommendations of the providers and applying internal and external quality control; and quality control of the database with a random review of 15% of the subjects.

**Information analysis:** Quantitative variables were described as median, interquartile range and range, since they presented a non-normal distribution according to the Kolmogorov-Smirnov test with Lilliefors correction. Qualitative variables were described with absolute (n) and relative (%) frequencies, including HIV prevalence. Analyses were performed in IBM SPSS 27.0.

**Ethical aspects:** the guidelines of the Declaration of Helsinki and Resolution 8430 of the Colombian Ministry of Health (articles 5 to 16) were followed, according to this last one, the research was classified as above minimum risk and was endorsed by the FAI.

### 3. Results

The median age was 29 years, with an interquartile range between 24-35 and 18-68 years. The highest proportion were men (83.6%), people with no schooling (51.9%), single (64.5%) and affiliated to the subsidized regime (52.1%), with 16.0% currently living on the street and 10.9% who were in prison in the last year. In felt morbidity, the highest proportion is related to the consumption of medicines (26.3%) and suffering from an illness (20.1%)

**(Table 1)**

**Table 1. Sociodemographic description and morbidity felt in the study group.**

Qualitative variables and their categories		n	%
Gender	Female	48	16,4
	Male	245	83,6
Educational level	None	152	51,9
	Incomplete elementary school	38	13,0
	Secondary incomplete	12	4,1
	High school complete	46	15,7
	Technical	35	11,9
	University	10	3,4
Marital status	Single	189	64,5
	Married - Unmarried	104	35,5
Health insurance affiliation	Contributive	110	37,7
	Subsidized	152	52,1
	None	30	10,3
Other	Homeless person	47	16,0
	In prison in the last year	32	10,9
Morbidity felt (last month)	Takes medications	77	26,3
	Suffering from any illness	59	20,1
	You are not in good health	46	15,7
	Have been hospitalized	42	14,3
	Have allergies	14	4,8
	High night sweats	37	12,6
	Unexplained weight loss	32	10,9
	Frequent diarrhea	12	4,1

The prevalence of HIV was 5.5%, HCV 31.7% and HBV 4.1%; among those positive for HIV, 87.5% (14/16) registered coinfection with HCV and 53.6% (9/16) with HBV; in addition, 6.5% indicated that they or their current sexual partners have been previously diagnosed with STDs, 94.5% use drugs in their sexual intercourse, 37.2% have changed their sexual partner in the last 6 months and have had sex with key groups, while 18.4% receive drugs or money in exchange for sex (Table 2)

« *Qualitative variables were described with absolute (n) and relative (%) frequencies, including HIV prevalence.* »

**Table 2. Prevalence of HIV, other STDs, and sexual risk factors.**

Qualitative variables and their categories		N	%
STD Diagnosis	HIV	16	5,5
	HCV	93	31,7
	HBV	12	4,1
Previous STDs in the individual or his or her current sexual partner	Yes	19	6,5
	Syphilis	7	2,4
	Gonorrhea	6	2,0
	Genital herpes	1	0,3
	Viral Hepatitis	7	2,4
Other sexual risk factors	Use of drugs in sexual intercourse <sup>b</sup>	277	94,5
	Change of sexual partner in the last six months	109	37,2
	Sexual relations with key people <sup>a</sup>	109	37,2
	Receives drugs <sup>b</sup> or money in exchange for sex	54	18,4

a. Sex workers, street dwellers, people who inject drugs, men who have sex with men, transgender people.

b. Marijuana, cocaine, heroin, basuco, or other stimulants or hallucinogens.

The HIV prevalence was not associated with sex (Fisher  $p=0.732$ ), marital status (Chi2  $p=0.478$ ), health affiliation (Chi2  $p=0.137$ ), having been in prison in the last year (Fisher  $p=0.397$ ), previous STIs (Fisher  $p=1,000$ ), change of sexual partner (Chi2  $p=0.116$ ), having sex with key groups (Chi2  $p=0.980$ ), drug use during sex (Fisher  $p=1.000$ ) and none of the variables related to morbidity felt (Fisher  $p=1.000$ ).

The factors associated with HIV included the following:

1. Age group (Chi2  $p=0.001$ ), with a prevalence of 10.4% in the 30-68 age group, and 1.8% in the 18-29 age group, with a prevalence ratio of 5.8 (95%CI=1.7-20.0)
2. Living on the street (Fisher  $p=0.000$ ), those who presented this condition registered an HIV prevalence of 25.5%, compared to 1.6% in those who did not live in this condition, with a prevalence ratio of 15.7 (IC95%=5.3-46.6).
3. Receiving money or drugs in exchange for sex (Fisher  $p=0.043$ ); the subjects who registered this behavior presented a prevalence of 11.6%, compared to 4.2% in those who do not, for a prevalence ratio of 2.6 (95%CI=1.0-7.0).
4. And schooling (Chi2 trend  $p=0.003$ ); in this variable there were no cases in people with elementary, incomplete high school, technical or university studies; the prevalence was 9.9% in subjects with no schooling and 2.2% in those with completed high school.



#### 4. Discussion

In the current study, HIV prevalence in PWID was 5.5%, similar to a study on factors associated with cocaine use, where HIV prevalence was 5.4% in 1017 PWID in five cities in Colombia (13), but higher than a study in Armenia with 265 PWID where it was 2.6% (11), as well as a study with PWID from Medellin and Pereira where it was 3.8% and 1.9%, respectively (12) (10); these small differences could be attributed to the heterogeneity in the behaviors and risk levels of the different PWID in Colombia. However, the current study, and the few available in Colombia, show lower rates than other international studies; thus, an investigation with 459 PWID from Tehran reported a prevalence of 24.4% (14) and in 821 PWID from India it was 31% (15), which shows that this route of transmission in Colombia does not have the magnitudes reported in other countries, which could be indirectly related to the low consumption of injectable drugs in Colombia, compared to others such as marijuana, cocaine or inhalants (16).

Despite the above, it is important to keep in mind that PWID have a high frequency of risk behaviors such as not using needles, syringes or other sterile implements, or sharing their needles with other subjects; for example, in a study conducted in Medellin, 27% of PWID reported using syringes used by other people (17) and in a study conducted in 6 cities in Colombia it was found that the use of shared syringes is common in this population (11), which should be a priority for clinical and public health interventions.

Among the HIV-positive PWID, 87.5% were coinfecting with HCV and 53.6% with HBV. These results concur with another study in Manipur, India with 821 PWID where 31% were HIV positive with an HCV coinfection rate of 95% (15), also in Delhi, India a study with 595 HIV positive PWID, HCV coinfection was recorded at 75.5% (n=449) and HBV at 6.4% (n=38) (18). The prevalence of these co-infections is common in this key group, given that the most frequent routes of transmission of HIV and these hepatitis viruses are contact with blood, semen during unprotected sex, and sharing needles with people infected with the viruses (19). It is worth mentioning that it was not possible to contrast this evidence with other Colombian studies, as the few studies on PWID are not exhaustive in reporting coinfections, which is a relevant fact for health management, given that this type of evidence corroborates that intervening in the main risk factors in this population would have a favorable impact on several infections that share transmission routes.

The factors associated with HIV in this PWID group were age, schooling,

living on the street, and receiving money or drugs in exchange for sex. In contrast, no related studies were found in Colombia containing all the factors analyzed; however, a study in Colombia identified that the factors associated with HIV in PWID population with HIV were age, socioeconomic status, and micro-trafficking (13). This is different from another study in Medellín, where the associated factors were injecting in public spaces and the use of used needles and syringes (20). Although there are few Colombian studies on factors associated with HIV in PWID, these comparisons show heterogeneity in the most affected subgroups, which implies the need to conduct studies for each population given the impossibility of extrapolating this type of evidence to other groups, even in the same country; to which is added the evidence generated by authors from other countries who have reported associated factors different from those reported in the current study (21).

In this research, the highest prevalence was recorded for those over 29 years of age. In Colombia, there were no comparative studies that show the prevalence of infection broken down by age group, in contrast to international studies; For example, a study in Vietnam reported that the highest prevalence of PWID with HIV is found in an age range of 23 to 31 years, supporting that young PWID are more likely to have a risk profile for HIV, which is different from the current study and, once again, corroborates the difficulty in extrapolating evidence related to associated factors from previous studies (22).

In this study, the prevalence was 9.9% in PWID without schooling. In comparison, a study in Medellín found that of the 224 PWID, 3.6% were HIV-positive and more than half reported having previous knowledge about HIV acquired in educational institutions (20); in Armenia, the prevalence of HIV was 2.6% and when the analyses were disaggregated by schooling, it was found that 6.7% among subjects with primary education and 2.1% in those with secondary education, showing a higher proportion of infection in those with less schooling (23). This shows that low educational level has a considerable effect in acquiring HIV infection, which could be attributed to low information on this type of infection, preventive measures, among others.

*«In Colombia, there were no comparative studies that show the prevalence of infection broken down by age group, in contrast to international studies.»*



Among PWID being homeless, the prevalence was 25.5%. However, a study in three Colombian cities showed that out of 507 homeless people, only 8% were positive for HIV and used injectable heroin, determining that injecting drug use in homeless people is not a relevant risk factor for HIV (24). However, it is important to note that in Colombia, and worldwide in general, the interaction of these risk conditions is little studied; for example, in Iran of 593 homeless people, 27.05% were PWID of which 11.38% were positive for HIV, highlighting that more than half of these users shared injectable material (25), this type of evidence shows the importance of simultaneously studying the effects of various risk conditions for HIV in subsequent studies.

The PWID population that reported receiving money or drugs in exchange for sex had a prevalence of 11.6%. In contrast, in Spain, HIV prevalence among PWID women with this same risk factor was 53.3% (26). The high prevalence has been attributed to the greater vulnerability of women to these practices, in order to sustain their drug use or that of their partner, exposing them to a double risk of HIV infection (27). However, it should be pointed out that the distribution by sex in those studies is not comparable with the current one, so more research is needed in this field, given the double HIV risk attributable to sharing syringes and not using condoms when having sex under the effect of substances (28). This becomes even more important when considering that receiving money or drugs in exchange for sex among the PWID population is frequent; one study shows that they engage in some activity associated with drugs, whether selling, injecting or engaging in sexual exchanges (29).

### **Conclusion**

A higher prevalence of HIV than reported in previous studies in the city was obtained, a high proportion of co-infection with hepatitis B and C viruses, and groups with a higher occurrence of HIV were identified. These results, in addition to providing a baseline for evaluating subsequent interventions in this group, demonstrate the intersectionality in HIV risk, injecting drug use, viral hepatitis, poor schooling, street conditions, and others that show the clinical, epidemiological, and social complexity of the impact of HIV in this group.

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**E-mail correspondence:** jaiberth.cardona@udea.edu.co.

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