Illicit substance use among MSM and HIV in South America

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Outline

- Illicit substance use in South America (Argentina, Brazil and Peru)
  - Epidemiology (last 5-10 years)
  - Substance use and HIV

- Illicit substance use among MSM in Argentina, Brazil and Peru
  1. What illicit substances are MSM using?
  2. Do MSM use more illicit substances than hetero men?
  3. When do MSM use substances? Chemsex?
  4. Do MSM have substance use disorders (SUD)?
  5. Is illicit substance use a risk for HIV infection among MSM?
  6. Does the use affect HIV prevention measures?

- Summary on research gaps on the above questions
Substance use is driven by multiple factors, including drug market

UNODC. World Drug Report-2017
## Epidemiology of Substance Use Differs Across Geographic Regions and Time

### Table: 12-month illicit substance use in the Americas-2015

<table>
<thead>
<tr>
<th>Substance</th>
<th>South America % (CI 95%)</th>
<th>North America % (CI 95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis</td>
<td>2.9 (2.8-3.0)</td>
<td>12.4 (12.3-12.4)</td>
</tr>
<tr>
<td>Cocaine*</td>
<td>0.9 (0.75-0.96)</td>
<td>1.8 (1.73-1.88)</td>
</tr>
<tr>
<td>Amphetamines** and prescription stimulants</td>
<td>0.25 (0.24-0.26)</td>
<td>1.9 (1.69-2.26)</td>
</tr>
<tr>
<td>“Ecstasy”</td>
<td>0.16 (0.14-0.17)</td>
<td>0.9 (0.89-0.89)</td>
</tr>
<tr>
<td>Opioids (opiates and prescription)</td>
<td>0.14 (0.06-0.49)</td>
<td>4.4 (4.1-4.5)</td>
</tr>
<tr>
<td>Opiates</td>
<td>0.06 (0.03-0.21)</td>
<td>0.5 (0.43-0.5)</td>
</tr>
</tbody>
</table>

Men and women, 12-65 years. *Cocaine includes cocaine salt, "crack" cocaine and other types such as coca paste, cocaine base, basuco, paco and merla. **Includes amphetamines and methamphetamines.

Sources: United Nations Office on Drugs and Crime estimates based on annual report questionnaire data and other official sources.
### 12-month illicit substance use among general population from Argentina, Brazil and Peru

<table>
<thead>
<tr>
<th>Substance</th>
<th>Argentina % (CI 95%)</th>
<th>Brazil % (CI 95%)</th>
<th>Peru %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis</td>
<td>7.8 (6.8-8.8)</td>
<td>2.5 (2.1-2.9)</td>
<td>1.0</td>
</tr>
<tr>
<td>Cocaine</td>
<td>1.5 (1.1-2.0)</td>
<td>0.9 (0.7-1.05)</td>
<td>0.4</td>
</tr>
<tr>
<td>Pasta base/Paco or Crack</td>
<td>0.1 (0.01-0.3)</td>
<td>0.3 (0.2-0.4)</td>
<td>0.5</td>
</tr>
<tr>
<td>Amphetamines and prescription stimulants</td>
<td>0.1 (0.03-0.2)</td>
<td>0.3 (0.2-0.4)</td>
<td>-</td>
</tr>
<tr>
<td>Hallucinogens(LSD, peyote, mescaline, etc)</td>
<td>0.6 (0.3-0.9)</td>
<td>0.3 (0.1-0.4)</td>
<td>-</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>0.3 (0.1-0.5)</td>
<td>0.15 (0.1-0.2)</td>
<td>0.0</td>
</tr>
<tr>
<td>Inhalants</td>
<td>0.1 (0.02-0.15)</td>
<td>0.2 (0.1-0.3)</td>
<td>0.1</td>
</tr>
<tr>
<td>Prescription opioids</td>
<td>-</td>
<td>1.4 (1.1-1.7)</td>
<td>-</td>
</tr>
<tr>
<td>Heroin</td>
<td>&lt;0.02</td>
<td>0.05 (0.0-0.1)</td>
<td>&lt;0.0</td>
</tr>
<tr>
<td>Any illicit</td>
<td>8.3 (7.2-9.3)</td>
<td>3.2 (2.8-3.6)</td>
<td>1.5</td>
</tr>
</tbody>
</table>

% of people in treatment by first drug of abuse at admission

<table>
<thead>
<tr>
<th>Drug Type</th>
<th>Argentina</th>
<th>Brazil</th>
<th>Peru</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis</td>
<td>15.6%</td>
<td>14.2%</td>
<td>45.6%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>70.2%</td>
<td>64.9%</td>
<td>49.6%</td>
</tr>
<tr>
<td>Inhalants</td>
<td>4.4%</td>
<td>8%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Notes

* Definitions of treatment interventions, recording practices (including counting rules) and methods for determining the primary drug of abuse differ from country to country;
** Figures may reflect number of persons or treatment episodes depending on the Member State; figures exclude alcohol and nicotine.

Sources: UNODC Annual Report Questionnaire (ARQ); Inter-American Drug Abuse Control Commission (CICAD)
HIV prevalence among cocaine users (general population)

**FIG. 6** | Regional patterns in injecting drug use and HIV among people who inject drugs, 2015

(a) Prevalence of injecting drug use

- Oceania
- Europe
- Asia
- Americas
- Africa

(b) Number of PWID and those among this group living with HIV

Injected cocaine use decreased in some LA countries
HIV prevalence among cocaine users (general population)

- HIV among non-injecting cocaine users
  - Argentina = 6.3%
    - N=504, Clinical + non-clinical sample of non-injecting cocaine users from Buenos Aires (Rossi et al., 2008)
  - Brazil = 4.97% (CI 95% 3.75-6.56)
    - N=7381 crack users, time-location sampling (Bastos & Bertoni, 2014)
  - Peru = ?
12-month substance use according to HIV status in Brazil. III BNHS, 2015

<table>
<thead>
<tr>
<th>Substance</th>
<th>HIV Yes (%)</th>
<th>HIV No (%)</th>
<th>P-value (Rao-Scott adjustment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>49.5</td>
<td>43.1</td>
<td>0.34</td>
</tr>
<tr>
<td>Tobacco</td>
<td>45.3</td>
<td>15.3</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Cannabis</td>
<td>10.5</td>
<td>2.5</td>
<td>0.06</td>
</tr>
<tr>
<td>Crack- cocaine</td>
<td>5.3</td>
<td>0.3</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

De Boni et al. Preliminary data (Non-injected substance use and HIV status in the III Brazilian Household Survey on Substance Use - accepted to NIDA Forum 2018)
N=3343 PLWHA in CCASAnet sites from Argentina, Brazil, Chile, Honduras, Mexico and Peru

Substance use among MSM in Argentina, Brazil and Peru

1. What illicit substances are MSM using?
2. Do MSM use more illicit substances than heterosexual men?
3. When do MSM use substances? Chemsex?
4. Do MSM have SUD?
5. Is illicit substance use a risk for HIV infection among MSM?
6. Does the use affect HIV prevention measures?

Summary on research gaps on the above questions
1. What illicit substances are MSM using?

- Club drugs, ALS:
  - Peru. Young, 2016. WS, n=556: 0
  - Peru. Ludford, 2013. CS, n=5148: 0
  - Brazil. Torres, 2018. WS, n=5065: 0
  - Brazil. Rocha, 2013. RDS, n=3449: 0
  - Argentina. Balan, 2013. RDS, n=500: 0

- Hallucinogens:
  - Peru. Young, 2016. WS, n=556: 0
  - Peru. Ludford, 2013. CS, n=5148: 5
  - Brazil. Torres, 2018. WS, n=5065: 7
  - Brazil. Rocha, 2013. RDS, n=3449: 10
  - Argentina. Balan, 2013. RDS, n=500: 0

- Inhalants/poppers:
  - Peru. Young, 2016. WS, n=556: 0
  - Peru. Ludford, 2013. CS, n=5148: 4
  - Brazil. Torres, 2018. WS, n=5065: 0
  - Brazil. Rocha, 2013. RDS, n=3449: 0
  - Argentina. Balan, 2013. RDS, n=500: 4

- Cocaine:
  - Peru. Young, 2016. WS, n=556: 0
  - Peru. Ludford, 2013. CS, n=5148: 14
  - Brazil. Torres, 2018. WS, n=5065: 23
  - Brazil. Rocha, 2013. RDS, n=3449: 30
  - Argentina. Balan, 2013. RDS, n=500: 0

- Cannabis:
  - Peru. Young, 2016. WS, n=556: 0
  - Peru. Ludford, 2013. CS, n=5148: 10
  - Brazil. Torres, 2018. WS, n=5065: 31
  - Brazil. Rocha, 2013. RDS, n=3449: 45
  - Argentina. Balan, 2013. RDS, n=500: 0

- Any illicit:
  - Peru. Young, 2016. WS, n=556: 0
  - Peru. Ludford, 2013. CS, n=5148: 8.9
  - Brazil. Torres, 2018. WS, n=5065: 43
  - Brazil. Rocha, 2013. RDS, n=3449: 45
  - Argentina. Balan, 2013. RDS, n=500: 70

Note: 0= Not available at the paper. Club drugs include ecstasy; ALS= Amphetamine-like stimulants. Cocaine include crack and pasta básica. Methods: RDS=respondent driven sampling; CS=cross-sectional convenience; WS= websurvey. Measures from prior year (12/6/3 months)
2. Do MSM use more illicit substances than hetero men?

12-month substance use by sexual orientation. III LNUD, Brazil. 2015

<table>
<thead>
<tr>
<th></th>
<th>MSM % (SE)</th>
<th>Hetero % (SE)</th>
<th>p-value (Rao-Scott adjustment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>78.1 (5.2)</td>
<td>51.5 (1.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Binge</td>
<td>45.6 (6.5)</td>
<td>23.9 (0.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Inhalants</td>
<td>3.2 (2.3)</td>
<td>0.3 (0.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ecstasy</td>
<td>4.5 (3.0)</td>
<td>0.2 (0.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LSD</td>
<td>1.9 (1.9)</td>
<td>0.3 (0.1)</td>
<td>0.02</td>
</tr>
<tr>
<td>Cannabis</td>
<td>16.7 (4.8)</td>
<td>3.9 (0.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Cocaine</td>
<td>3.2 (1.7)</td>
<td>1.3 (0.2)</td>
<td>0.09</td>
</tr>
<tr>
<td>IDU lifetime</td>
<td>3.9 (3.1)</td>
<td>0.5 (0.1)</td>
<td>0.003</td>
</tr>
</tbody>
</table>

*III LNUD = III Brazilian Household Survey on Substance Use. No statistically significant difference on the use of crack, ketamine, BZD, amphetamines and opioids. N= 6113 (5861 hetero and 87 MSM). MSM= homosexual/gay and bisexual Preliminary results.
3. When do MSM use substances? Chemsex?

- **Illicit drugs before/at sex**
  - Peru. Young, 2016.WS, n=516: 4%
  - Peru. Galea, 2017.CS, n=341: 6.5%
  - Peru. Delgado, 2017.CS, n=1607: 15%
  - Peru. Deiss, 2013.TLS, n=738: 20%

- **Alcohol before/at sex**
  - Brazil. Cunha, 2015.CS, clinical, n=391: 21%
  - Brazil. Cunha, 2014.CS, n=155 living w/HIV: 45%
  - Peru. Deiss, 2013.TLS, n=738: 28%

- **WS** = websurvey; **CS** = cross-sectional; **TLS** = time-location sampling
4. Do MSM have SUD?

- Not everyone who uses psychoactive substances has a substance use disorder (SUD).

- No studies were found specifically evaluating illicit SUD among MSM from Argentina, Brazil and Peru in the last 5 years.

<table>
<thead>
<tr>
<th></th>
<th>Heavy Drinking</th>
<th>Alcohol Use Disorder</th>
<th>Drug Use Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gay</td>
<td>18.1%</td>
<td>16.8%*</td>
<td>3.2%*</td>
</tr>
<tr>
<td>Bisexual</td>
<td>16.4%</td>
<td>19.5%*</td>
<td>5.1%*</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>13.7%</td>
<td>6.1%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

*Statistically significant differences between Gay/Het and Bisexual/Het

McCabe SE et al., 2009, Addiction. 1333-45
5. Is illicit substance use a risk for HIV infection among MSM?

Controversial results

- Montano et al, JAIDS, 2005:
  - 7 countries, n=13,847 MSM, data from 1999-2002
- Bautista et al, Sex. Transm. Infect, 2004:
  - Same data: Distribution of cocaine use was different across countries, as well as the association with HIV

<table>
<thead>
<tr>
<th>TABLE 3. Logistic Regression Analysis of Risk Factors Associated With HIV-1 Infection Among MSM by Region in South America, 1999–2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Factor</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>No, sexual partners per week</td>
</tr>
<tr>
<td>2 or 3 (none or 1)</td>
</tr>
<tr>
<td>4 or more (none or 1)</td>
</tr>
<tr>
<td>Sexually transmitted infection history (no)</td>
</tr>
<tr>
<td>Sexual contact with foreigners (no)</td>
</tr>
<tr>
<td>Use of drugs (no)</td>
</tr>
<tr>
<td>Use of marijuana (no)</td>
</tr>
<tr>
<td>Use of heroin (no)</td>
</tr>
<tr>
<td>Use of cocaine (no)</td>
</tr>
<tr>
<td>Highest drug use profile</td>
</tr>
<tr>
<td>Non-IDU (none)</td>
</tr>
<tr>
<td>IDU (none)</td>
</tr>
<tr>
<td>Use of alcohol (no)</td>
</tr>
<tr>
<td>Blood transfusion history (no)</td>
</tr>
</tbody>
</table>

Statistically significant variables are illustrated in boldface. Categories in parentheses describe the reference category for odds calculations. NA, not applicable; AOR, adjusted odds ratio by age (y) and country; Andean region indicates Venezuela, Colombia, Ecuador, Peru, and Bolivia; Southern Cone Region indicates Chile, Argentina, Uruguay, and Paraguay.
5. Is illicit substance use a risk for HIV infection among MSM? (cont.)

- **Argentina.**
  - Segura et al., 2007: 327 MSM followed for 12 months: cocaine/SU not associated with seroconversion
  - Pando et al, 2003: 694 MSM, cross-sectional, 18% Illicit substance use, no association with HIV infection

- **Brazil**
  - Silva et al., 2012: 1085 MSM, case–control, 10% Illicit substance use. No association between Illicit Substance Use and incident HIV

- **Peru**
  - Lama et al., 2006: 3280 MSM, snowball, cocaine before/at sex increased likelihood of HIV
6. Does the illicit substance use affect HIV prevention measures?

- Most studies found association of illicit substance use and condomless sex
  - Argentina: Balan. AIDS & Behavior, 2013
  - Peru: Ludford et al. Plos One, 2013. Caceres et al. 2008; Clark et al., 2007

Is it related to intoxication? Exchange of sex for drugs/money?
6. Does the illicit substance use affect HIV prevention measures?

- PrEP Brasil

<table>
<thead>
<tr>
<th></th>
<th>Number of participants</th>
<th>Level indicative of ≥4 doses per week</th>
<th>OR (95% CI)*</th>
<th>p value</th>
<th>Adjusted OR (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>375</td>
<td>277 (74%)</td>
<td>..</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Binge drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>241</td>
<td>179 (74%)</td>
<td>1.18</td>
<td>0.51</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>No</td>
<td>134</td>
<td>98 (73%)</td>
<td>1 (ref)</td>
<td>..</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Stimulant use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>77</td>
<td>67 (87%)</td>
<td>2.30</td>
<td>0.02</td>
<td>2.23</td>
<td>0.04</td>
</tr>
<tr>
<td>No</td>
<td>298</td>
<td>210 (71%)</td>
<td>1 (ref)</td>
<td>..</td>
<td>1 (ref)</td>
<td>..</td>
</tr>
</tbody>
</table>

AOR controlled for sociodemographics, sexual behavior, depression, receiving SMS, GI symptoms. Stimulant use = cocaine (powder, crack, paste) or amphetamines or club drugs (ecstasy, LSD, GHB and ketamine) in the prior 3 months.

Grinsztejn et al., Lancet HIV, 2018
Summary research gaps

• Lack of data/details on the type of illicit substances MSM are using nowadays, and the context of substance use (chemsex?)

• Preliminary data on differences between substance use among MSM and hetero. No recent data on illicit SUD
  Do MSM have specific treatment demands?

• Cocaine/alcohol decrease condom use → should PrEP be an option for all?
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