# Progress Towards HIV Epidemic Control Among Young Key Populations in India

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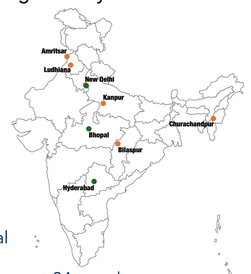
## BACKGROUND

- Population-based data characterizing trends in HIV prevalence and incidence among key populations are critical to monitoring progress towards epidemic control, but such data are sparse, especially stratified by age.
- We examined overall and age-specific trends in HIV incidence and prevalence among men who have sex with men (MSM) and people who inject drugs (PWID) in India.

## METHODS

Fig. 1. Study sites.




- 3 serial cross-sectional surveys of MSM in 3 cities & PWID in 6 cities
  - Round 1: 2012-13 (n~1000/city)
  - Round 2: 2016-17 (n~1000/city)
  - Round 3: 2022-24 (n~750/city)
- Participants were were recruited via respondent driven sampling (RDS)
  - ≥18 years, verbal consent & valid RDS coupon
  - MSM: self-identified male with history of oral/anal intercourse with another man in past 12 months
  - PWID: injected drugs for non-medical purposes in past 24 months
- Interviewer-administered survey and blood draw
- HIV testing was performed on-site (three rapid tests) and results were delivered with pre- and post-test counseling
- Cross-sectional HIV incidence was estimated by subtype C validated algorithms incorporating BED or LAg Avidity EIA, plus JHU BioRad Avidity assay, CD4 count and HIV RNA
- HIV RNA was quantified using Abbott RealTIme HIV-1 viral load assay with a limit of detection of 150 copies/mL
- Incidence estimation and tests of incidence difference (2012-13 vs. 2023-24) calculated via Kassanjee estimator
- Temporal changes (2012-13 vs. 2022-24) in HIV prevalence and viral suppression (<150 c/mL) were assessed via age and site-adjusted Poisson regression with robust variance
- All prevalence estimates were RDS-II weighted
- Ethics approval by the JHU and YRGCARE IRBs

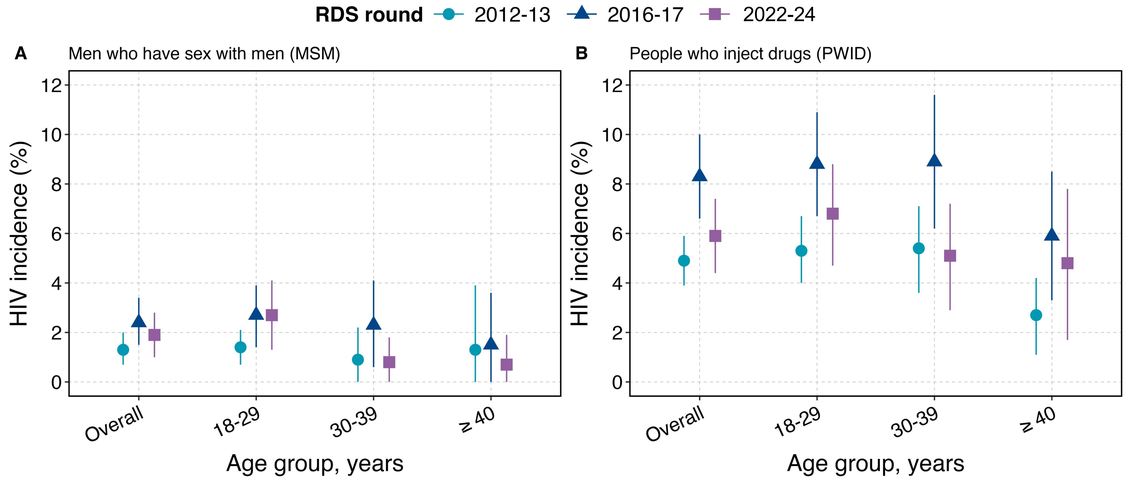
## RESULTS

**Table 1.** Population characteristics by RDS round.

| | 2012-2013 | 2016-2017 | 2022-2024 |
|---|---|---|---|
| MSM | N=2993 | N=3003 | N=2249 |
| Age group, y | | | |
| 18-29 | 79% | 58% | 59% |
| 30-39 | 16% | 27% | 24% |
| ≥40 | 6% | 14% | 17% |
| PWID | N=5998 | N=5999 | N=4499 |
| Age group, y | | | |
| 18-29 | 51% | 50% | 56% |
| 30-39 | 31% | 29% | 31% |
| ≥40 | 18% | 20% | 13% |
| Gender | | | |
| Male | 95% | 97% | 97% |
| Female | 5% | 3% | 3% |
| Hijra/Transgender | <1% | <1% | <1% |

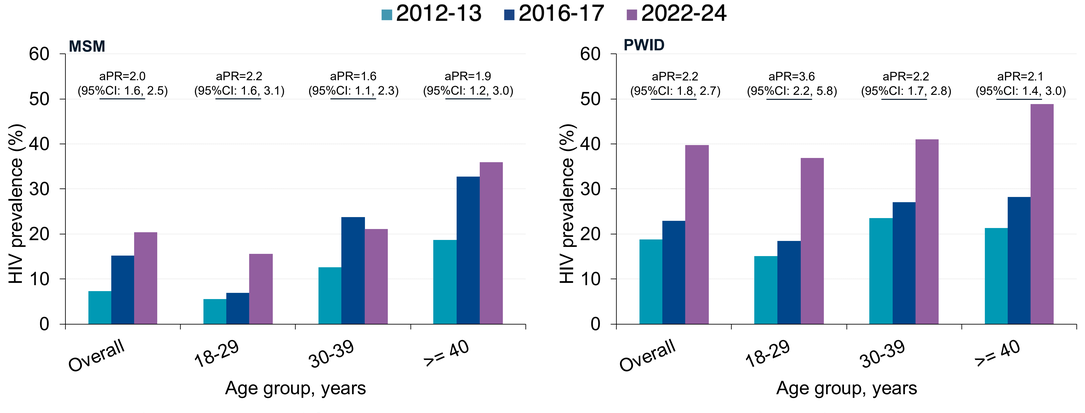
**Persistently high HIV incidence and rising HIV prevalence among MSM and PWID—despite overall improvements in viral suppression—and ongoing age-related disparities in viral suppression, highlight gaps in equitable, age-responsive services and underscore the urgent need to accelerate the scale up of combination prevention services, including PrEP, to achieve epidemic control.**

Figure 2. Overall and age-specific temporal trends in cross-sectional HIV incidence estimates.



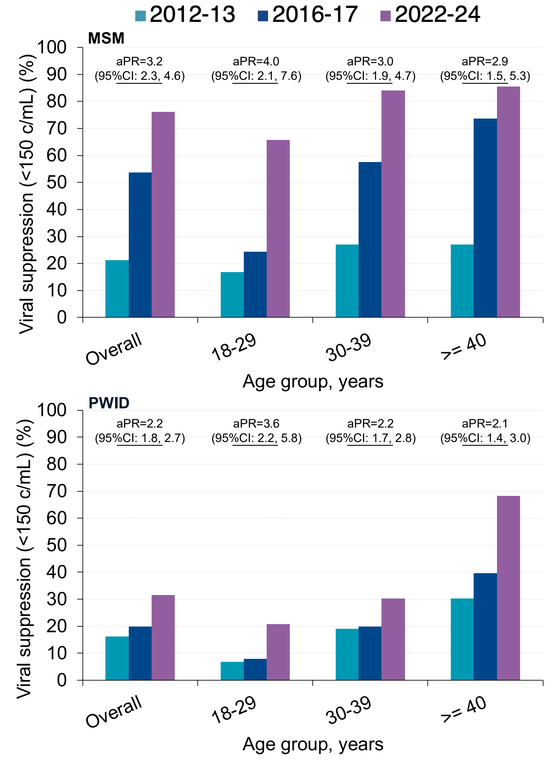

- HIV incidence remained persistently high between 2012-13 and 2022-24 among MSM (1.3% vs. 1.9%; p=0.349) and PWID (4.9% vs. 5.9%; p=0.247) overall and within each age group (Fig. 2).

Figure 3. Overall and age-specific temporal trends in HIV prevalence estimates.




- HIV prevalence increased from 7% in 2012-13 to 20% in 2022-24 (adjusted prevalence ratio [aPR]=2.0; 95%CI=1.6-2.5) among MSM and from 19% to 40% (aPR=2.0; 95%CI=1.8-2.2) among PWID (Fig. 3).
- HIV prevalence increased from 6% in 2012-13 to 16% in 2022-24 (aPR=2.2; 95%CI=1.6-3.1) among MSM aged 18-29 years and increased from 15% in 2012-13 to 37% in 2022-24 (aPR=2.1; 95%CI=1.8-2.4) among PWID aged 18-29 years (Fig. 3).

Figure 4. Overall and age-specific temporal trends in HIV viral suppression among participants with HIV.




## CONCLUSIONS

- HIV incidence was persistently high and HIV prevalence doubled, despite improvements in HIV viral suppression, over a decade among MSM and PWID.
- HIV viral suppression was consistently lowest among young key populations living with HIV (<30 years).
- These temporal and demographic patterns in population-level HIV epidemic indicators signal a need to intensify targeted intervention scale-up.
- Sustained commitment to the implementation of effective HIV prevention strategies, including pre-exposure prophylaxis, for these groups will be key to achieving global HIV epidemic control.

## ADDITIONAL KEY INFORMATION

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