



High prevalence of HIV among wives of married men who have sex with men in India

Aylur K Srikrishnan,¹ Shruti H Mehta,² Cecilia Tomori,² Santhanam Anand,¹ Balakrishnan P,¹ David D Celentano,² Gregory M Lucas,³ Sunil S Solomon^{2,3}

¹YR Gaitonde Centre for AIDS Research and Education, India; ²Johns Hopkins Bloomberg School of Public Health, USA; ³Johns Hopkins University School of Medicine, USA



Correspondence to:
Sunil S Solomon,
1830 E. Monument St, Rm 444,
Baltimore, MD 21287
sss@jhmi.edu

BACKGROUND

- MSM in LMICs represent a vulnerable population with a high HIV burden
- Significant proportion of MSM marry to satisfy socio-cultural needs, particularly since anal intercourse is punishable in several countries
- HIV prevalence has been shown to be higher among married MSM compared to unmarried MSM
- No data exists on HIV burden among female spouses of MSM from LMICs

METHODS

STUDY POPULATION

MSM who have not disclosed their status

- 18 years of age or older
- Provide verbal consent
- Self-identify as MSM
- Currently married
- Wife not aware of MSM behavior

Disclosed MSM couples

- | | |
|-----------------------------|--|
| Men | Wives |
| 1. 18 years of age or older | 1. 18 years of age or older |
| 2. Self-identify as MSM | 2. Married to an MSM enrolled in the study |
| 3. Currently married | 3. Provide verbal consent |
| 4. Provide verbal consent | |
| 5. Wife provide consent | |

Table 1. Eligibility Criteria by risk-group

RECRUITMENT

- Convenience sample of participants were recruited via flyers posted at MSM drop-in centers and integrated care clinics across 3 Indian cities
- Wives were brought in to the study by their spouses – study staff never contacted wives directly

STUDY PROCEDURES

- All participants provided consent prior to undergoing a survey and provided a blood specimen
- MSM and their wives were both consented and interviewed separately
- HIV testing was performed on-site (three rapid tests) and results were delivered to participants with pre- and post-test counseling
- Care continuum outcomes were self-reported

STATISTICAL METHODS

- Descriptive statistics were used to characterize three groups: MSM who had not disclosed their MSM behavior to their wives, MSM who had disclosed their MSM behavior to their wives and the wives of those who had disclosed their MSM behavior.
- Care continuum outcomes were calculated in all three groups among those who were HIV positive by laboratory testing.
- Logistic regression with generalized estimating equations to account for clustering by site was used to identify correlates of HIV infection among wives of MSM
- All analyses were conducted using Stata version 13 (College Station, TX)

ETHICAL CLEARANCES

- This study was approved by the JHMI and the YRGCARE institutional review boards

	Undisclosed MSM (n=150)	Disclosed MSM (n=149)	Wives of disclosed MSM (n=149)
Median age (IQR)	35 (29 – 41)	36 (32 – 43)	33 (38 – 37)
Sexual orientation, n(%)			
• Homosexual/Gay	68 (45.3)	98 (65.8)	0 (0)
• Heterosexual	2 (1.3)	0 (0)	149 (100)
• Bisexual	80 (53.3)	51 (34.2)	0 (0)
Educational attainment, n(%)			
• No education	16 (10.7)	40 (26.9)	63 (42.3)
• Primary school only	13 (8.7)	23 (15.4)	30 (20.1)
• Some secondary school	71 (47.3)	64 (43.0)	48 (32.2)
• High school graduate	50 (33.3)	22 (14.8)	8 (5.4)
Employment, n(%)			
• Homemaker	0 (0)	0 (0)	45 (30.2)
• Unemployed	6 (4.0)	0 (0)	17 (11.4)
• Daily wages	37 (24.7)	58 (38.9)	36 (24.2)
• Salaried	107 (71.3)	91 (61.1)	51 (34.2)
Lifetime male partners, median (IQR)	95 (20 – 450)	50 (15 – 150)	1 (1 – 4)
Lifetime female partners, median (IQR)	1 (1 – 3)	2 (1 – 4)	NA
History of sex work, n(%)	35 (23.8)	40 (27.4)	1 (0.9)
Alcohol Dependence			
• No dependence	177 (78.0)	120 (79.5)	146 (98.0)
• Mild dependence	17 (11.3)	19 (12.6)	2 (1.3)
• Harmful/hazardous	16 (10.7)	12 (8.0)	1 (0.7)
HIV Prevalence (95% CI)	33.8 (26.1, 42.2)	46.9 (38.7, 55.3)	27.5 (20.5, 35.4)

Table 2. Demographics and risk behaviors of undisclosed married MSM and disclosed married MSM and their spouses (n=448)

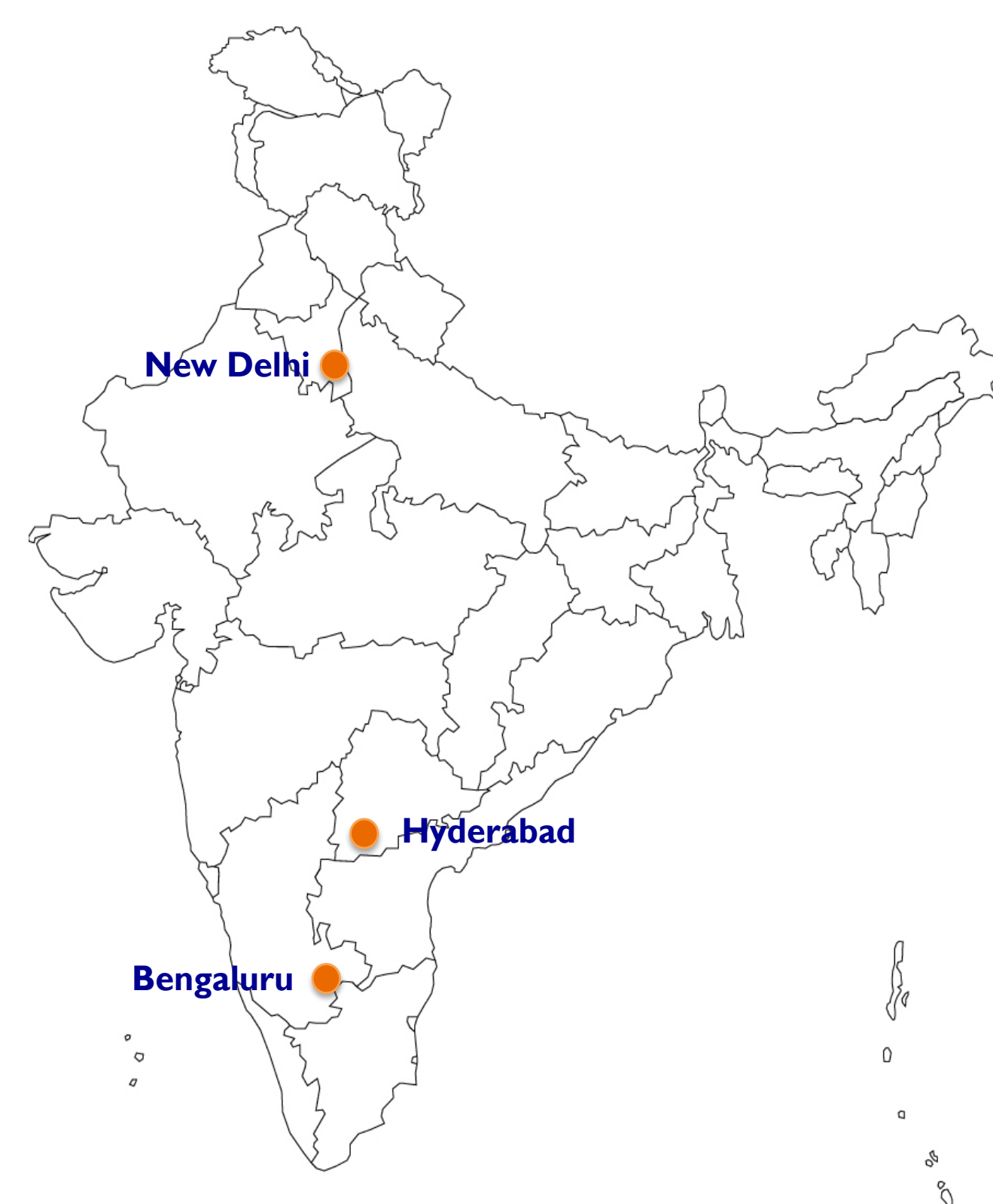


Figure 1. Study Sites

RESULTS

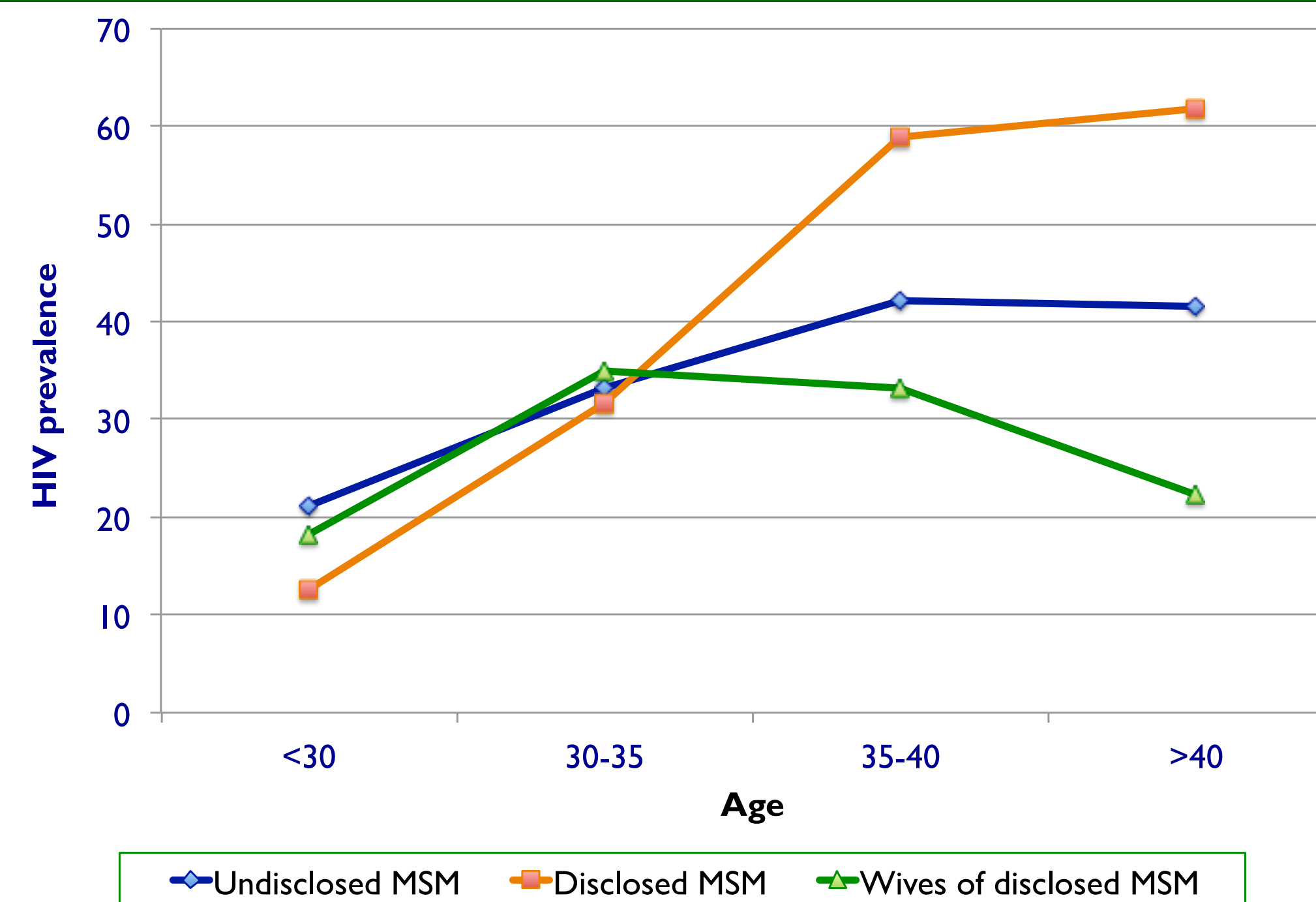


Figure 2. HIV Prevalence by age and study population

	Undisclosed MSM (n=150)	Disclosed MSM (n=149)	Wives of disclosed MSM (n=149)
Median duration of marriage in years (IQR)	10 (4 – 15)	15 (8 – 20)	15 (9 – 20)
Number of children			
• 0	23 (15.3)	8 (5.3)	7 (4.7)
• 1	50 (33.3)	43 (28.5)	43 (29.1)
• ≥2	77 (51.3)	97 (65.1)	98 (65.8)
Arranged marriage			
• Yes	142 (96.0)	132 (88.6)	134 (90.0)
• No	6 (4.1)	17 (11.4)	15 (10.1)
Reason for marriage			
• Companionship	69 (80.2)	112 (97.4)	121 (87.1)
• Children	68 (79.1)	110 (95.7)	114 (82.0)
• Respect	50 (58.1)	91 (79.1)	110 (79.1)
• Avoid being labeled MSM	37 (43.0)	71 (61.7)	–
Type of intercourse (ever) with spouse, n(%)			
• Oral	52 (35.1)	52 (34.9)	49 (32.9)
• Vaginal	148 (100.0)	149 (100.0)	149 (100.0)
• Anal	21 (14.2)	35 (23.5)	30 (20.1)
Condom use with spouse, n(%)			
• Never	66 (44.6)	73 (49.0)	70 (47.0)
• Sometimes	30 (20.2)	27 (18.1)	30 (20.1)
• Always	52 (35.1)	49 (32.9)	49 (32.9)
Disclosure of sex with other men to spouse, n(%)			
• I told her/told by spouse	–	70 (61.4)	22 (14.9)
• Saw having sex with a man	–	49 (43.0)	50 (33.8)
• Saw explicit messages	–	7 (6.1)	3 (2.0)
• Told by a family member/friend	NA	46 (30.9)	20 (13.4)
• Told by another MSM	–	7 (6.1)	7 (4.7)
• Don't know husband is having sex with other men	–	–	47 (31.5)

Table 3. Characteristics of marital relationships

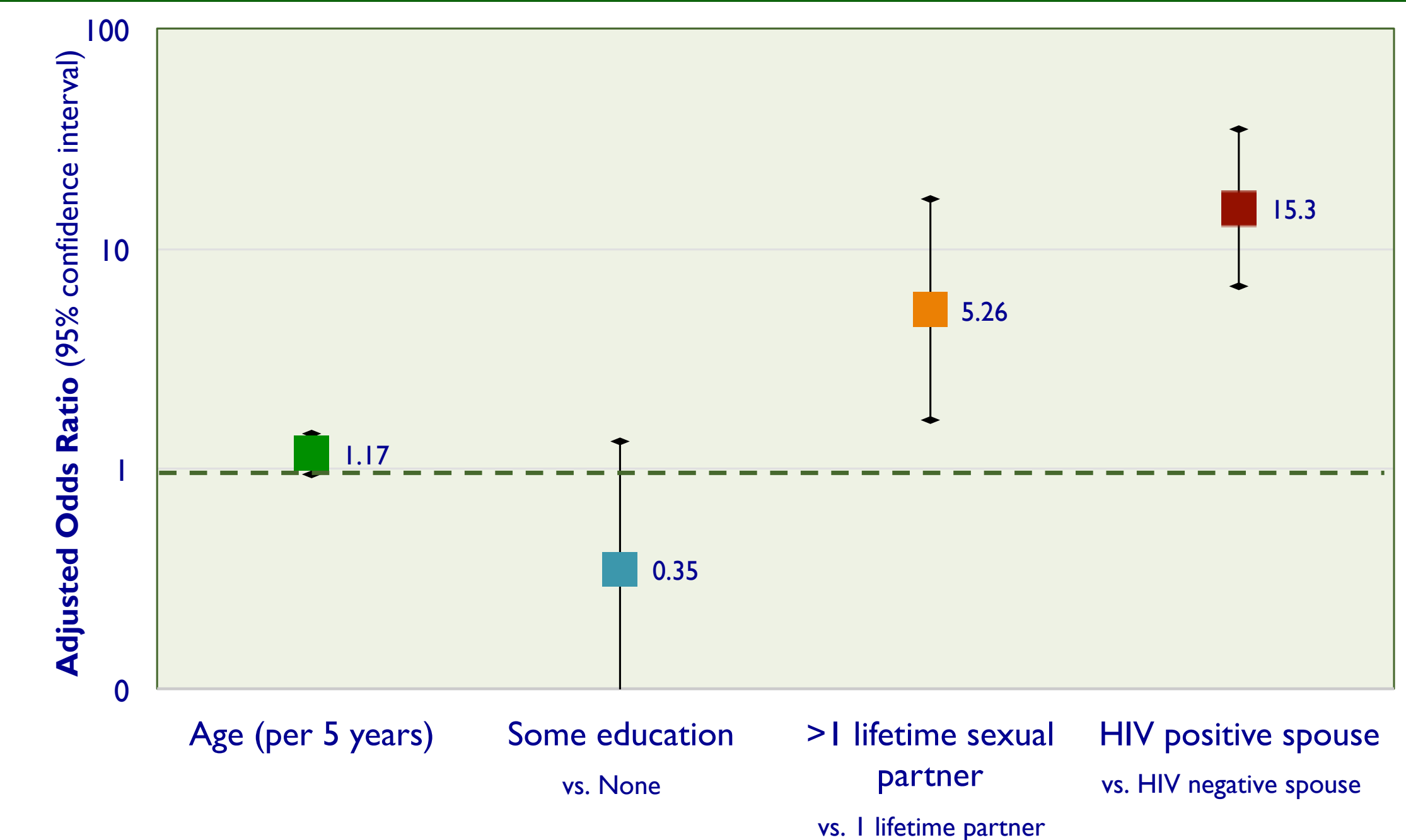


Figure 3. Correlates of HIV infection among wives of MSM in India

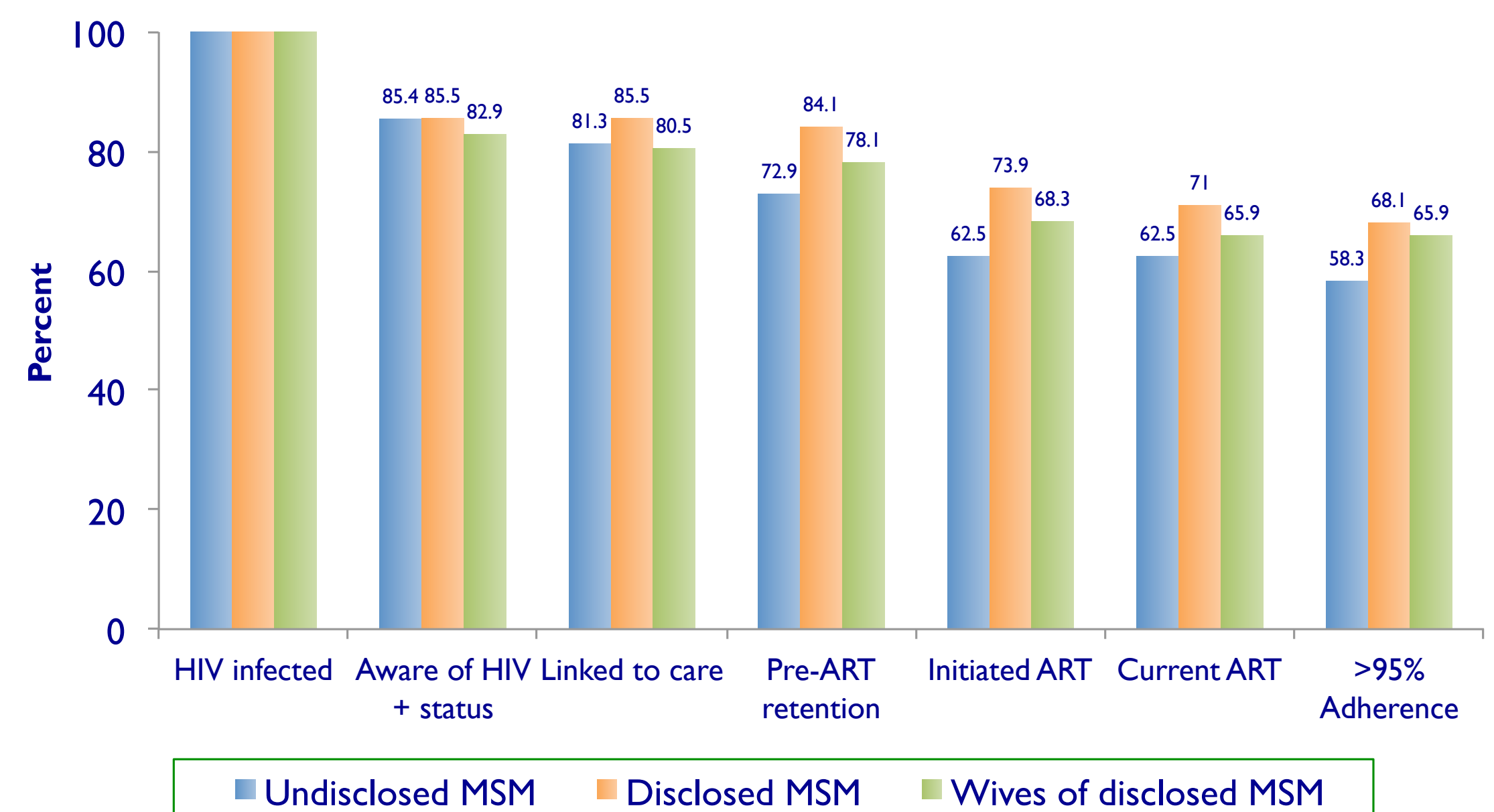


Figure 4. HIV care continuum by study population

CONCLUSIONS

- Wives of MSM bear a high burden of HIV infection despite low self-reported risk behavior
- The strongest correlate of HIV infection among these wives was the HIV status of their husband (prevalence did not differ by whether the husband reported use of antiretroviral therapy [Data not shown]).
- Engagement in HIV care was high for all three groups particularly among the MSM who had disclosed their status suggesting perhaps that HIV diagnosis may prompt MSM disclosure
- Most transmission appears to occur early after marriage highlighting the need for interventions to address transmission in these populations immediately following marriage
- Wives of undisclosed MSM are at high risk for HIV infection and may be less likely engaged in care
- Wives of MSM may be an important group where PrEP can be considered.

This research has been supported by the National Institutes of Health, US Grants# MH 101059, MH 89266 and DP2040244 and the Office of AIDS Research, NIH/Indian Council for Medical Research Joint Working Group. This work was facilitated by the Johns Hopkins Center for AIDS Research (1P30AI094189). We would also like to thank the participants, without whom this research would not have been possible.