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PREVALENCE OF MEN SEX WITH MEN (MSM) AMONG HIV INFECTED PATIENTS IN BANGALORE CITY

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ABSTRACT

HIV infection among men who have sex with men(MSM) has been increasing in recent years around the world, particularly in Asia This global trend is being seen in India, with the current estimated HIVPrevalence among MSM ranging between 7 and 16.5percent. This is in comparison with the overall adult HIV prevalence estimated to be 0.31 per cent (0.25-0.39%) in 2009. Study aims to find out the prevalence of MSM among HIV infected population Men who have sex with men (MSM) in India is disproportionately likely to be HIV-infected and prevalence rate crutches and recorded 3.29%. Interventions should incorporate a holistic framework to address the risk, sexual health and overall well being of MSM.

KEYWORDS: MSM, HIV, ART, NACO, Specificity, Prevalence

INTRODUCTION

The estimates for the prevalence of HIV in MSM in India vary. Pockets of high HIV prevalence among MSM are identified in high prevalence States as well as in Delhi, Gujarat and West Bengal. Twenty eight districts have 5 per cent or more HIV prevalence among MSM according to the BSS 2009[13].The States that have the highest mean HIVprevalence amongst MSM in 2008 are Karnataka, Andhra Pradesh, Manipur, Maharashtra, Delhi, Gujarat, Goa, Orissa, Tamil Nadu and West Bengal[14].

While overall HIV trends amongst this population group are stable in India; there is an increasing trend among south Indian States and Delhi. The Government of India's National AIDS Control Organization (NACO) estimates an overall HIVprevalence of 6.41 per cent among MSM, although this may be a lower-limit estimate15. For example, in Mumbai, 12 per cent of MSM seeking voluntary counselling and testing services were HIV-infected, and 18 per cent of the MSM screened in 10 clinics in Andhra Pradesh were found to be infected16-18.

We found an 8 per cent prevalence in a sample of 210 MSM in Chennai recruited by peer outreach workers4. In the context of this disproportionally high level of HIV risk, it becomes extremely important to understand the socio-cultural factors that may exacerbate sexual risk among this group. This article aims to find out the MSM prevalence through statistical model and correlate with associated risk factors of HIV-MSM.

MATERIALS AND METHODS

Secondary data was obtained from a random sample of ART centers of Bangalore city with the population at one point in time. Demographic profile, clinical features and laboratory data was recorded systematically. Collected data were analyzed by using Mini tab- 6.50version.

	T (HIV infected patients on HAART)	$\bar{T}$ (Patients not on HAART)	Total
E(Exposed to MSM risk)	n_{11}	n_{12}	n_{1+}
$\bar{E}$ Un exposed to MSM risk	n_{21}	n_{22}	n_{2+}
Total	n_{+1}	n_{+2}	n_{++}

The count $(n_{11}, n_{12}, n_{21}, n_{22}) \sim Multinomial(n_{++}\ P(TE), P(\bar{T}, E), P(T\ \bar{E}), P(\bar{T}\bar{E})$

With this study, we have estimated the following parameters of the interest, Prevalence of MSM P (HIV Infected MSM) estimated by $\frac{n_{+1}}{n_{++}}$, P (HIV Infected MSM exposure ART treatment) estimated by $P(E) = n1\ +/n++$,

Prevalence of MSM with On HAART treatment $P(D/E) = n11/(n1+)$

Prevalence of MSM with not On HAART treatment $P(D/\bar{E}) = n21/(n2+)$,

Relative risk factors were measured by $\psi = P[D/E]/P[D/E^{-}]$.

TABLES AND GRAPHS

Table 1: Over View of Different Characteristics of HIV Infected MSM

SL	Categorical Variables	Number(%)	CI-95%	P-Value
01	Religion			
	Hindu	88 (58.67%)	91.10-97.40	P<0.05
	Muslim	38 (25.33%)	36.20-45.26	P<0.05
	Christian	19 (12.67%)	16.50-26.21	P>0.05
	Others	5 (3.33%)	2.60-8.90	P>0.05
02	Residence			
	Urban	112 (74.67%)	31.70-47.0	P<0.05
	Semi urban	36 (24.00%)	21.80-36.80	P>0.05
	Rural	2 (1.33%)	10.09-15.66	P>0.05
03	Age(Yrs)			
	18-24	108 (72.00%)	39.20-56.65	P<0.05
	25+	42 (28.00%)	43.50-60.80	P>0.05
04	Education status			
	Illiterate	98 (65.33%)	17.40-32.50	P<0.05
	Literate	52 (34.67%)	67.50-83.62	P<0.05
05	Occupation			
	Students	8 (5.33%)	10.05-26.45	P>0.05
	Unemployed	102 (68.00%)	9.86-23.22	P<0.05
	Employed	40 (26.67%)	67.58-78.62	P>0.05
06	Marital status			
	Never married	84 (56.00%)	61.90-77.60	P<0.05
	Married	52(34.67%)	45.89-56.82	P<0.05
	Previously married	14 (9.33%)	10.50-22.70	P>0.05
07.	Current Marital status			
	Yes	12 (8.00%)	9.0-21.36	P>0.05
	No	138 (92.00%)	80.70-94.21	P<0.05
08.	Heterosexual exposure			
	Ever sex with a women	142 (94.67%)	78.57-83.50	P<0.05
	Ever fathered children	8 (6.33%)	22.68-45.63	P>0.05
09.	Living with a female sex partner			

Table 1 - Contd.,				
	Yes	114 (76.00%)	16.89-36.41	P<0.05
	No	36 (24.00%)	46.40-64.50	P>0.05
10.	Circumcision			
	Circumcised	138 (92.00%)	36.45-56.88	P<0.05
	Un circumcised	12 (8.00%)	48.98-70.02	P<0.05
11.	No. of sex partner in last 6 months			
	<=10 partners	74 (49.33%)	46.58-78.90	P<0.05
	11-24 partners	65 (43.33%)	16.89-32.11	P>0.05
	>=25 partners	11 (7.33%)	19.84-37.98	P>0.05
12	STI's			
	Yes	86 (57.33%)	91.23-94.52	P<0.05
	No	64 (42.67%)	82.22-91.80	P<0.05
13.	Sexual orientation			
	Homosexual	138 (92.00%)	48.64-63.33	P<0.05
	Bisexual	8 (5.33%)	30.10-43.68	P>0.05
	Heterosexual	4 (2.67%)	3.0-14.78	P>0.05
14.	Sexual attraction			
	Mostly /Only two men	4 (2.67%)	76.70-80.25	P>0.05
	Equally to men and women	32 (21.33%)	8.69-20.51	P<0.05
	Mostly /only to men	114 (76.00%)	14.78-35.80	P<0.05
15.	Ever sex with women			
	Never	24 (16.00%)	30.68-42.01	P>0.05
	Ever	126 (84.00%)	88.56-91.45	P<0.05
16.	History of homophobic abuse			
	Never	144 (96.00%)	63.28-70.40	P<0.05
	Ever	6 (4.00%)	5.60-8.90	P>0.05
17.	History of rape			
	Never	146 (97.33%)	30.89-40.23	P<0.05
	Ever	4 (2.67%)	8.69-14.58	P>0.05
18.	Type of anal sex			
	Mostly insertive	88 (58.67%)	63.33-70.41	P<0.05
	Equally insertive and receptive	24 (16.00%)	19.88-46.58	P>0.05
	Mostly receptive	38 (25.33%)	16.80-27.98	P>0.05
19.	History of selling sex			
	Never	139 (92.67%)	36.28-56.35	P<0.05
	Ever	11 (7.33%)	9.80-28.63	P>0.05
20.	Alcoholic consumption			
	Past 30 days	24 (16.00%)	9.60-15.62	P>0.05
	< a week	40 (26.67%)	36.99-52.89	P<0.05
	At least once a week	21 (14.00%)	45.-02-53.26	P<0.05
	About every day	65 (43.33%)	65.89-74.56	P<0.05
21.	Illicit drug consumption			
	Never	42 (28.00%)	32.45-56.88	P<0.05
	Ever	108 (72.00%)	41.28-55.22	P<0.05
22.	Condom use for sex act in last 3 months			
	>66%	98 (65.33%)	36.21-48.98	P<0.05
	33-66%	35 (23.33%)	24.56-41.23	P<0.05
	<33%	17 (11.33%)	19.22-36.47	P<0.05
23.	Ever started HAART			
	Yes	96 (64.00%)	74.52-83.88	P<0.05
	No	54 (36.00%)	40.05-65.97	P<0.05

*Significant P≤0.05.

Table 2: Prevalence of MSM among HIV Infected Population

Variables	T (HIV infected patients on HAART)	$\bar{T}$ (Patients not on HAART)	Total
E(Exposed to MSM risk)	96 (a)	54 (c)	150 (a+c)
$(\bar{E}$ Unexposed to MSM risk	2896 (b)	1502 (d)	4398 (b+d)
Total	**2992 (a+b)**	**1556 (c+d)**	**4548 (GT)**

$$Positive\ predictive\ value(PPV) = \frac{a}{a+b} x100 = 3.29$$

$$Negative\ predictive\ value(NPV) = \frac{d}{c+d} = 96.52$$

$$Specificity = \frac{d}{b+d} x100 = 34.21\%$$

$$Sensitivity = \frac{a}{a+c} x100 = 64.00\%$$

Overall prevalence of MSM among HIV infected patients were 3.29%

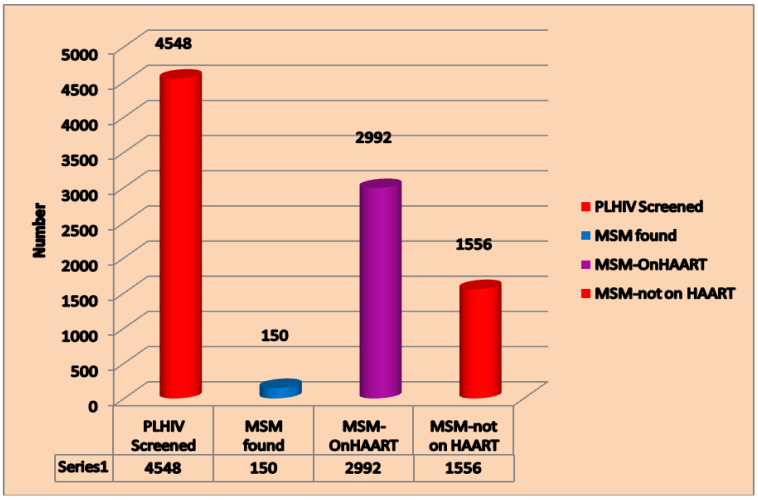

Figure 1: HIV Infected MSM Status in Bangalore City

DISCUSSIONS – PROOF

A total of 4598 PLHIV were recuited with written conscent and MSM status is assessed by using WHO standard scale. The mean age of the patients was 26.52±0.89 years, age of first sexual act among MSM has been found to be as low as 12 years[19]. Different religions of MSM was actively involved in sex Hindu 58.67%, Muslim 25.33% Christian 12.67%,others 3.33%.Gegrophically MSM was resided in Urban 74.67%($p<0.05$), semi urban 24.00%($p>0.05$) and Rural 1.33%($p>0.05$).72.00% of HIV infected MSM were actively involved sexual activities at the reproductive age group of 18-24 years 72.00%($p<0.05$), more than 25 years was 28.00%($p>0.05$).Education status have more influenced indicator variable for MSM activities and it was accounted illiterate 65.33% ($p<0.05$) and literate was 34.67%($p>0.05$).Occupational status were observed; students was 5.33%($p>0.05$),unemployed 68.00% ($p<0.05$)and employed was 26.67%($p>0.05$),marital status of MSM was never married 56.00%($p<0.05$),previously married 34.67%($p<0.05$) .We should correlate with current marital status of MSM and it was accounted not married 92.00% ($p<0.05$).Heterosexual exposure of MSM was 94.67%($p<0.05$) ,ever sex with a women 6.33 %($p>0.05$),living with female sex partner stauts was 76.00%

($p<0.05$) ,circumcised 92.00% ($p<0.05$), It has also been reported that those who are older, educated, open about their MSM sexual behaviour, were more likely to have participated in an HIV prevention intervention[4].

Although HIV prevention interventions typically require more than education, education is an essential component[41]. Are we missing the younger MSM and those who are less educated. A report from Bangalore found that 15 percent of MSMs were full time commercial sex workers and In a study from Bangalore[30], among a sample of 357 men reporting same sex behaviour; 41 percent also reported sex with a woman in the past year and 14 per cent were currently married. Condom use was very inconsistent with all male partners, while 98 percent reported unprotected vaginal sex with their wives. These findings are consistent with other research findings from India, with the proportions of MSM currently married to women ranging from 23 to 42 percent[5, 22, 31]. The frequency of bisexual behaviour among MSM, coupled with low condom use, high HIV prevalence and increased transmission efficiency of anal sex, means that the contribution of men who have sex with men and women (MSMW) to the HIV epidemic, through transmission to their female partners, could be substantial[30].

MSM had < or equal to 10 partners was 49.33%($p<0.05$), 11-24 partners 43.33%($p<0.05$), more than 25 clients 7.33% ($p>0.05$).STIs are more common in MSM 57.33 % is being manifested, Population of MSM was more actively inclined to sexual orientation and it was accounted homosexual 92.00%($p<0.05$), Bisexual 5.33%($p>0.05$), heterosexual was 2.67%($p>0.05$),sexual attraction mostly /only to men 76.00% ($p<0.05$).Type of Anal sex were documented and it was expressed mostly insertive 58.67% ($p<0.05$),equally insertive and receptive 16.00% ($p<0.05$), mostly receptive was 25.33% ($p>0.05$).Alcoholic consumption past 30 days 16.00%($p>0.05$),< a week 26.67% ($p<0.05$),at least once a week 14.00% ($p<0.05$),about every day alcohol have consumed was 43.33%($p<0.05$). HIV infected MSM patients were started HAART treatment with different ART regimen 64.00 %(p<,0.05).

There are very limited data on the prevalence of MSM among PLHIV in India. One study found that prevalence of MSM 12.55 per cent (MSM assessment scale) [2.] Sexual orientation was strongly associated with HIV diseases progression, unprotected anal sex, higher numbers of male partners were statistically significant ($p<0.05$).As per the statistical model the prevalence of MSM among PLHIV was 3.29 % with negative predictive value (PPV) 96.52 ,specificity 34.21% and sensitivity 64.00%.

The Co efficient of determination R^2 of the above model was 85.96%. The frequency of bisexual behaviour among MSM, coupled with low condom use, high HIV prevalence and increased transmission efficiency of anal sex, means that the contribution of men who have sex with men and women (MSMW) to the HIV epidemic, through transmission to their female partners, could besubstantial[30].The perception of sexual risk for HIV varies among MSM, and throughout the epidemic MSM were engaged in sophisticated decision making about what they consider to be risky42. Studies have reported that the reasons for continued sexual risk taking among MSM in India include *(i)* perceptions that HIV is transmitted through vaginal sex and via sex workers, resulting in individuals engaging in alternate anal and oral sexual practices as a way to avoid infection,

CONCLUSIONS

Interventions should incorporate a holistic framework to address the risk, sexual health and overall well being of MSM. Addressing co-occurring psychosocial risk factors is needed to improve effect sizes of current HIVprevention interventions and allow for more effective uptake by MSM. It is also important to focus on increasing condom use rates with the male and female partners of MSM, who are generally perceived as low risk. The proposed model can fetches more accurate and reliable results for estimating the prevalence of HIV –MSM rate.

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