

The profile of sexually transmitted infections of men who have sex with men: A tertiary care center-based comparative cross-sectional study

Balakrishnan Pookkottil Pravitha, Priya Prathap, Neelakandhan Asokan, Thiruthara Sukumaran Sudhiraj¹
Departments of Dermatology, Venereology and Leprosy and ¹Social and Preventive Medicine, Government Medical College, Thrissur, Kerala, India

Address for correspondence:

Dr. Priya Prathap, Gitanjali, Kadavil Lane, Chembukkavu, Thrissur, Kerala, India.
E-mail: priya.anil.an@gmail.com

Abstract

Context: Very few studies have compared the prevalence of sexually transmitted infections (STIs) and risk factors particularly among men who have sex with men (MSM) with the non-MSM group. **Aims:** (1) To compare the profile of STIs among MSM and non-MSM attending our STI clinic, (2) To identify the risk factors for STIs among MSM. **Subjects and Methods:** In this comparative cross-sectional study, we analyzed the records of all male attendees of our STI clinic from March 2015 to March 2020 for demographic details, sexual history, clinical examination and laboratory findings. **Statistical Analysis Used:** Chi-square test and logistic regression were utilized in analysis. **Results:** The number of both MSM and non-MSM attending the clinic increased over 5 years with a more sharp increase in the number of MSM, after 2017. 68.9% of MSM had their first sexual contact before attaining 20 years of age. The most common STIs were syphilis (53.75%), genital warts (30%) and herpes genitalis (20.62%). Syphilis was the most frequent STI among MSM (48/74, 64.90%) as well as non-MSM (38/86, 44.20%); though its frequency was significantly more among MSM ($P < 0.01$). Being unmarried (odds ratio [OR] = 3.58, 95% confidence interval [CI] = 1.85–6.93, $P < 0.01$), having more than two sexual partners (OR = 4.49, 95% CI = 2.12–9.50, $P < 0.01$), practising peno-oral sex (OR = 4.74, 95% CI = 2.33–9.62, $P < 0.01$) and peno-anal sex (OR = 19, CI = 8.55–42.38, $P < 0.01$) were significantly associated with MSM behavior. **Conclusions:** There was an increasing trend of MSM attending the STI clinic from the year 2017. MSM persons are likely to be younger, unmarried, and have more than two sex partners. The commonest STI among MSM was syphilis.

Key words: Men who have sex with men, sexually transmitted infection, syphilis

Introduction

Men who have sex with men (MSM) is a term introduced in 1992 to describe a range of male-male sexual behaviors. MSM include gay-identified men and bisexual men.^[1]

MSM are at a greater risk of acquiring sexually transmitted infection (STIs) including HIV. Gupta *et al.* and Garg *et al.* reported a higher prevalence of bacterial STIs like syphilis and gonorrhoea among MSM compared to non-MSM.^[2,3] Several behavioral risk factors of STIs like alcoholism, intravenous drug use, practicing unprotected sex and having multiple sexual partners are associated with MSM. In recent years, we have noticed an increased number of MSM attending our STI clinic. There is a paucity of literature comparing the profile of STIs and risk factors among MSM with non-MSM. Hence we decided to conduct this study.

Subjects and Methods

This was a retrospective chart-based study. Ethical clearance was obtained from the institutional review board. Records of all male patients with STI who had attended the STI clinic of our department from March 2015 to March 2019 were studied. Patients with congenital syphilis and females were excluded from the analysis. The study population was divided into two groups, MSM and non-MSM. Male homosexuals and bisexuals were included in the MSM group. We noted down personal details, marital and sexual history, clinical examination findings, and laboratory findings from STI clinic records

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and transferred them to a master chart in MS excel. Data analysis was done using the statistical package for social sciences trial version. Numerical variables were expressed as mean and standard deviation. Categorical variables were expressed as frequencies and percentages. A Chi-square test was done to estimate the difference in the proportion of STIs between the two groups and logistic regression to determine the risk factors associated with STIs among MSM.

Results

One hundred and sixty male patients attended our STI clinic during the study period. Among them, 74 (46.30%) were MSM, and 86 (53.80%) were non-MSM. The number of MSM as well as non-MSM who attended our clinic increase d over the 5 years with a more sharp increase after 2017, especially among MSM [Figure 1].

The mean age of MSM was 24.2 ± 9 years and that of non-MSM was 32.8 ± 11 years. All patients aged <20 years (9/74, 12.2%) were MSM. Among MSM, more patients were in the age group of 20–30 years (35/74, 47.3%) whereas, among non-MSM, more were in the 30–40 years age group (36/86, 41.9%) [Figure 2].

The majority of MSM (51/74, 68.9%) had their first sexual contact before 20 years of age whereas it was between 20 and 30 years among non-MSM (57/86, 66.3%) [Figure 3].

Most of the patients ($n = 61$ [82.4%] among MSM; and $n = 80$ [93%] among non-MSM) were semi-professional workers. Out of 160 subjects, none among the MSM were intra venous drug users, compare d to two (2.3%) among non-MSM (odds ratio [OR] = 1.8, 95% confidence interval [CI]: 1.6–2.1).

Twenty five patients among MSM (33.8%) and 39 patients (45.3%) among non-MSM were practising unprotected sexual intercourse ($P = 0.25$). Sixty two patients (83.8%) among MSM had more than two sexual partners as compared to 46 patients (53.5%) among non-MSM (OR = 4.49, 95% CI = 0.14–0.54, $P < 0.01$).

Forty three (58.1%) of MSM were unmarried compared to 24 (27.9%) of non-MSM (OR = 3.58, 95% CI = 1.85–6.93, $P < 0.01$). Fifty nine (79.7%) MSM practiced peno-oral contact, compared to 39 (45.3%) among non-MSM (OR = 4.74, 95% CI = 2.33–9.62, $P < 0.01$). Sixty one (82.4%) among MSM practised peno-anal sex, as compare d to 17 (19.8%) of non-MSM (OR = 19, CI = 8.55–42.38, $P < 0.01$).

The most frequent STIs among the study population were syphilis (53.75%), genital warts (30%), and herpes genitalis (20.62%) respectively [Table 1].

Though syphilis was the most common STI among MSM and non-MSM, it was significantly more frequent among MSM ($P < 0.01$). Herpes genitalis was more frequent among non-MSM. On multivariate analysis, syphilis (adjusted OR = 11.48, 95% CI = 2.38–55.35, $P < 0.01$) and condylomat acuminat (adjusted OR = 10.12, 95% CI = 2.12–48.26, $P < 0.04$) were found to be more frequent among MSM. The most common co-existing STIs were HIV and syphilis in both groups (8.1% each). 5.4% of MSM were found to have HIV-human papillomavirus (HPV) co-infection. Common stages of syphilis among both groups were latent syphilis and secondary syphilis [Table 2].

On multivariate analysis, peno-oral and peno-anal route of sexual contact, having more than two sexual partners and

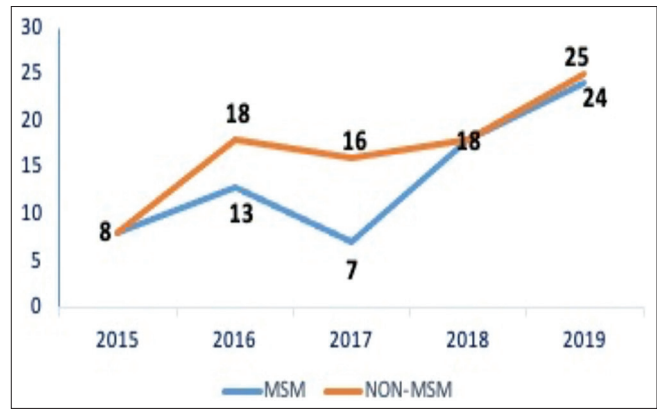


Figure 1: Year-wise distribution of MSM and non-MSM. MSM = Men who have sex with men

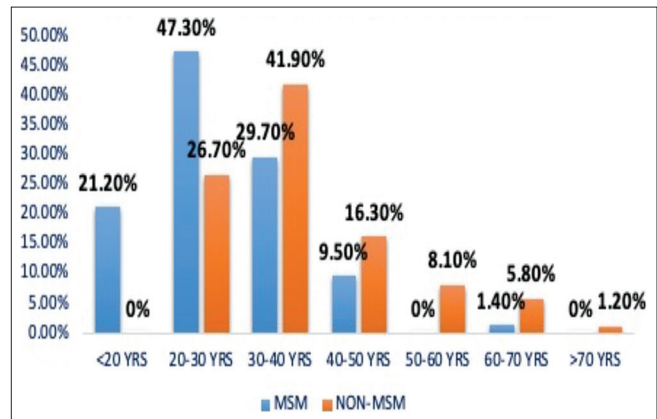


Figure 2: Age distribution among MSM and non-MSM. MSM = Men who have sex with men

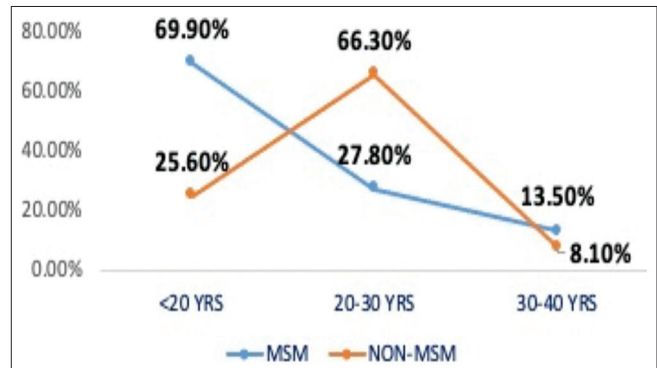


Figure 3: Age of first sexual contact among MSM and non-MSM. MSM = Men who have sex with men

being unmarried were noted to be significant risk factors for STIs among MSM.

Discussion

In our study, MSM accounted for about half of the total male STI patients who attended the clinic during the study period of five years. The number of both MSM and non-MSM who attended our STI clinic increase during the study period. Since 2017, the increase was more marked among MSM. The social and legal acceptance of homosexuality in recent times might have encouraged more MSM to seek medical care. Whether the annulment

Table 1: Frequency of various sexually transmitted infections among men who have sex with men and nonmen who have sex with men

Name of the sexually transmitted infection	Frequency among MSM (n=74), n (%)	Frequency among non-MSM (n=86), n (%)	Frequency among all male STI clinic attendees (n=160), n (%)	P	COR	AOR	95% CI
Syphilis	48 (64.9)	38 (44.2)	86 (53.7)	<0.01	1.46	11.4	8 2.38-55.35
Condylomata acuminata	27 (36.5)	21 (24.4)	48 (30)	<0.05	1.49	10.12	2.12-48.26
HIV	11 (14.9)	15 (17.4)	26 (16.25)	0.51	0.85	0.70	0.25-1.98
Herpes genitalis	6 (8.1)	27 (31.4)	33 (20.62)	0.89	0.25	0.91	0.23-3.60
Gonorrhoea*	3 (4.1)	1 (1.2)	4 (2.5)	0.10	3.48	11.43	0.61-213
Hepatitis B	0	0	0	-	-	-	-

*Gonococci was identified in smear and culture. COR=Crude odds ratio; AOR=Adjusted odds ratio; MSM=Men who have sex with men; STI=Sexually transmitted infection; CI=Confidence interval

Table 2: Comparison of different stages of syphilis among men who have sex with men and nonmen who have sex with men

Stages of syphilis	Frequency among MSM (n=48), n (%)	Frequency among non-MSM (n=38), n (%)	Total (n=86), n (%)
Primary	5 (10.41)	2 (5.26)	7 (8.14)
Secondary	18 (37.50)	14 (36.84)	32 (37.21)
Latent*	22 (45.83)	20 (52.63)	42 (48.84)
Recurrent*	2 (4.16)	0	2 (2.33)
Tertiary*	1 (2.08)	2 (5.26)	3 (3.49)

*Latent=Presence of seroreactivity without other evidence of primary, secondary, tertiary syphilis (gumma and cardiovascular syphilis), ocular syphilis or neurosyphilis; *Recurrent=Reinfection after adequate treatment due to unprotected sexual contact; *Tertiary=Cardiovascular syphilis was identified. There were no patients with gumma. MSM=Men who have sex with men

of part of Section 377 of the Indian Penal Code by the Supreme Court of India on September 06, 2018, making homosexuality legal in India was an indirect reason for the increase in the number of MSM in recent years is worth pondering.

In our study, syphilis was the most frequent STI (48/74, 64.9%) in MSM followed by condylomata acuminata (27/74, 36.5%). A similar pattern of STIs among MSM was noted in a retrospective analysis conducted in 2004–2010 in a tertiary care hospital in New Delhi. The prevalence of syphilis among MSM in that study was 27%. In a study conducted in Pune two decades ago among males attending STI clinics, only 5.8% out of 611 MSM had syphilis.^[3] According to the Center for Disease Control and Prevention (CDC), MSM accounted for 68.2% of reported primary and secondary syphilis cases in the United States in 2017.^[4]

These reports indicate an increasing frequency of syphilis among MSM over the years as noted in our study.

The proportion of HIV among MSM was 17.4% in our study, similar to previous studies conducted in Pune (18.5%) and Togo (22%).^[3,5] According to the National AIDS Control Organization Annual report of 2017–2018, the national prevalence of HIV was found to be 4.3% among MSM. MSM in developing countries have several-fold higher odds of having HIV infection compared to the general population.^[6,7] According to 2020 UNAIDS data, the risk of acquiring HIV was noted to be 26 times higher in MSM.^[8]

4.1% of MSM in our study had gonorrhoea, similar to the study in Pune which reported a prevalence of 4.3%.^[3] In a cross-sectional study conducted in Portugal, the prevalence of gonorrhoea among MSM was 16%.^[9] The most common coexisting STIs identified were HIV and syphilis among MSM (6/74; 8.1%) and non-MSM (7/84; 8.3%). In a study from Pune, 11% of MSM were co-infected with condylomata acuminata, syphilis, and herpes genitalis.^[3] Among MSM with primary and/or secondary

syphilis, 45.5% were retro-positive according to CDC fact sheet, 2017.^[4]

5.4% of MSM in our study had HIV-HPV co-infection. HPV co-infection accounts for the growing burden of anal high-grade squamous intraepithelial lesions (HSILs) and squamous cell carcinoma among people living with HIV/AIDS, particularly among MSM. Dysplastic changes may be found in 30% of such patients. A recent study found that younger MSM with histories of inadequate viral suppression (prolonged time to diagnosis or inadequate treatment adherence or both) were at a particularly high risk of developing HSIL.^[10]

The mean age of MSM was 24.2 ± 9 years in our study similar to various previous studies.^[1,4,5] 83.8% of MSM in our study had more than two sexual partners, similar to 86.4% from Pune.^[3] MSM behavior was associated with a higher risk of having multiple sexual partners in a cross-sectional population-based random sample survey conducted in Chennai in 2011.^[11] Only 33.3% of MSM included in our study were married, similar to the study from Pune (35.4%).^[3] The percentage of MSM who were married were 36% and 26% respectively in two other studies from India.^[3,11]

Anal intercourse was significantly associated with MSM in our study. A study conducted across 62 urban-rural locations in Andhra Pradesh show that 91.9% of MSM were practising peno-anal sex.^[12]

Our study has some limitations. Being a retrospective study, factors like educational status of patients, history of alcohol intake and knowledge about STIs and HIV which were not recorded in the case records, could not be analysed. Investigations like rectal and pharyngeal swabs and molecular investigations to diagnose STIs and HSV serology had not been done.

MSM plays an important role in the spread of STIs. Bisexual behavior makes MSM a key link in the spread of STIs and HIV in the community. Therefore, identification of various risk factors among MSM for STIs is important for effective control of STIs.

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Conflicts of interest

There are no conflicts of interest.

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