PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG MEN HAVING SEX WITH MEN{MSM} ATTENDING STANLEY MEDICAL COLLEGE IN NORTH CHENNAI

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CERTIFICATE BY GUIDE

This is to certify that the dissertation on PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG MEN HAVING SEX WITH MEN{MSM} ATTENDING STANLEY MEDICAL COLLEGE IN NORTH CHENNAI is a record of research work done by Dr.ASHWINI B in partial fulfilment for M.D. (DEPARTMENT OF DERMATOLOGY, VENEREOLOGY AND LEPROSY.) Examination of the Tamil Nadu, Dr. M. G .R. Medical University to be held in April 2018.The period of study is from August 2016 – August 2017.

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DECLARATION

I solemnly hereby declare that the dissertation entitled "PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG MEN HAVING SEX WITH MEN{MSM} ATTENDING STANLEY MEDICAL COLLEGE IN NORTH CHENNAI" was done by me at Government Stanley Medical College and hospital under the guidance and supervision of my HOD, Prof. Dr. V. Anandan.

The dissertation is submitted for the Degree of Doctor of Medicine in M.D., Degree Examination, Branch XX in DEPARTMENT OF DERMATOLOGY, VENEREOLOGY AND LEPROSY.

This is my original work and the dissertation has not formed the basis for the award of any degree, diploma, associate ship, fellowship or similar other titles. It had not been submitted to any other university or Institution for the award of any degree or diploma.

Dr.ASHWINI B

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Date :

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Certified that this dissertation entitled "PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG MEN HAVING SEX WITH MEN{MSM} ATTENDING STANLEY MEDICAL COLLEGE IN NORTH CHENNAI" is a bonafide work done by Dr. ASHWINI B, post graduate student of the Department of Dermatology, Venereology and Leprosy, Govt. Stanley Medical College ,Chennai-600001, during the academic year 2015-2018, in partial fulfilment of university rules and regulations for the award of MD Degree (Branch XX) Dermatology, Venereology and Leprosy.

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CONTENTS

INTRODUCTION

Men having Sex with Men(MSM) are male persons who engage in sexual activity with members of the same sex, regardless of how they identify themselves. The term was created in the 1990s by epidemiologists to study the spread of disease among men who have sex with men.

The Huffington Post postulates that the term MSM was created by Cleo Manago, the man who is also credited for coining the term same gender loving (SGL).

To describe a person as “homosexual (MSM)”can have 3 rather subtly different meanings:

1) It can describe a person’s behavior

2) It can describe a person’s preference

3) It can describe a person’s identity

Men who have sex with men (MSMs) are a vulnerable population for spread of sexually transmitted infections. They tend to have a different distribution patterns of STIs(sexually transmitted infections).

Men who have sex with men (MSM) face significant healthcare-related stigma which manifests as a barrier to the uptake of routine services including screening for sexually transmitted infections (STIs).

MSM are classified into different categories based on identity, gender, behavior, and profession. Based on identity they are categorized as "gay," "Kothis," (receptive partner) or "Panthis" (insertive partners), “double deckers”(both insertive and receptive). There are MSM who do not identify with queer labels but are homosexual or bisexual behaviorally.

Identification of MSMs is important as most of them are bisexual and promiscuous , thereby playing a role in spread of STDs in a vast number of partners. The profile of STDs also differs in MSM which makes it all the more important to identify them

Factors leading to high prevalence of STIs among MSM are

1) BIOLOGICAL FACTORS: unprotected anal intercourse carries a higher risk of transmission than vaginal intercourse(45-55% of MSM in India practice anal sex)

2) BEHAVIOURAL FACTORS: multiple sexual partners, less condom usage(5-20%), unawareness about infections, alcohol and drugs, poor health-seeking behavior, with only 20-30% of MSM going for STI checkup

3) SOCIAL AND CULTURAL FACTORS: fear of their sexual orientation and identity being revealed in society leads to less access to health services.

The overall median seroreactivity among MSM for syphilis is 10% and for HIV is 12%

MSMs are one of the risk group targeted by National AIDS Control Organization (NACO) to reduce human immunodeficiency virus (HIV) transmission. NACO estimates that India is home to 2.5 million MSMs of which 100,000 are at high risk of contracting HIV due to multipartner and commercial sexual practices. Already, 15% of this community is infected with this disease

AIMS AND OBJECTIVE

The objective of this study is to characterize the prevalence and pattern of STIs in this population to provide insight into appropriate STI screening and management guidelines for this population.

REVIEW OF LITERATURE

HUMAN SEXUAL BEHAVIOUR

Human Sexual behavior refers to a broad spectrum of behaviors in which humans display their sexuality. These behavioral expressions contains both biological elements and cultural influences and involves sexual arousal (with its physiological changes, both pronounced and subtle, in the aroused person). Sexual behavior ranges from the solitary (such as masturbation and autoerotic stimulation) to partnered sex (intercourse, oral sex, non-penetrative sex, etc.) that is engaged periodically. Sexual behavior can also involve behavior that is aimed at arousing desire in potential partners (courtship displays or rituals) or behavior aimed at enhancing sexual experiences.

PSYCHOLOGICAL THEORIES OF HUMAN SEXUALITY

Sexual behavior is considered as an inborn drive in the humans: it is even seen in infants. Sex drive is modified by social, cultural and interpersonal factors. Freud’s stages included the oral stage, the anal stage,the genital stage,the latency stage,and the reawakening of sexual impulses at puberty.The fundamental propensity to act sexually exists in general but that it may be modified by learning. The specific development of heterosexual or homosexual behavior results from the interaction of biological and social factors. Sexuality has a number of different aspects and meanings depending on variation in person, time,

culture, age, and situation. Sexuality is not a unitary phenomenon but part of social interaction and best explained by opportunity and contingencies of reinforcement acting upon a basic biological drive.

The sexual behavior is strongly channelized into particular patterns which is consistent and matches with their particular cultural backgrounds.Because of this cultural backgrounds , every individual is subjected to strong pressures to stick on to the traditional sexual behavior patterns which are being followed and practiced by hundreds or thousands of years of cultural heritage.

Human sexual behavior should be viewed with three aspects in mind: the biological factors, the learning processes , and finally the sociocultural environment. Since huge cultural variation exists between different groups of people in different places in the world, leads on to the large variations in sexual behavior in different civilizations all over the world.

CONCEPT OF SEXUAL DEVIANCE

Deviance is the behavior that contravenes the norms and culture of the society. These norms include both institutionalized norms and the shred norms. It is defined in terms of statistical abnormality or of psycho-pathology. The criteria which is used to define psychopathology is medical rationalization of the social criteria. A typical and most common example for this is “homosexuality”. Because of the

sociological defination of human sexual behavior , these individuals will have social stigma, which plays important negative role in the lives of these deviants (homosexuals).

Gagon et al[1] proposed a distinction between 3 types of deviance. 1) “normal deviance” this includes the behaviors such as masturbation , premariatal sex and oro-genital sex. The other two types of deviance distinguish between behaviours which are associated with particular subculture (such as homosexual subcultures) called “subcultural deviances” and those which are not (such as exhibitionism or incest) called as “individual deviances”. This categorization helps the individual to have a social group in which he feels normal.

SEXUAL ORIENTATION

Sexual orientation refers to the erotic and/or affectional disposition to the same and/or opposite sex.“Orientation”rather than “preference” is used because most individuals do not experience having ever had a choice about being attracted to women or men. The terms most commonly employed to refer to sexual orientation are heterosexual, homosexual ,and bisexual.

HOMOSEXUALITY

Male homosexual behavior has been denounced in the Old Testament and extolled by classical Greek poets like Hesiod, underscoring the longstanding awareness that these behaviors have been

commonly expressed since the beginning of human civilization, and demonstrating the ways that diverse cultures have grappled with deviations from the heterosexual norm[2]. Although the Bible recommended that men and women who engaged in homosexual intercourse be put to death, justifying this as a crime against nature, these behaviors were also associated with sacred rituals of local polytheistic cultures, suggesting that neighboring peoples were able to accept homosexuality. Although many famous personalities in history—e.g., Alexander the Great, Tchaikovsky, Walt Whitman—were known to prefer homosexual partners, until the landmark studies of Kinsey and colleagues, very little was known about the natural history and prevalence of male homosexual behavior[3]. Kinsey et al. examined the life histories of more than 6300 males and found that 2/3 had engaged in some homoerotic play as preadolescents, but only 15% of the events involved oral or anal–genital contact. Although the finding that 37% of the males had at least one postpubertal homosexual experience is higher than the rates reported in subsequent studies. Because of legal and social sanctions against the public expression of homosexuality until the advent of the sexual revolution of the past 40 years, earlier records of sexually transmitted disease (STD) epidemics, such as syphilis in the late fifteenth century,are generally not enlightening with regard to the extent that male homosexual behavior abetted the spread of specific STD pathogens. However, the increased social acceptance of

homosexuality in developed countries in the late 1960s and 1970s was associated with the development of a subculture that accepted intimacy with multiple partners as a normative behavioral pattern[4].

To describe a person as " homosexual" can have three different meanings:

1) "Homosexual" can describe a person's sexual behavior- i.e., a person who predominantly or exclusively has sex with a person or persons of the same sex can be said to be homosexual in behavior. Many people whose behavior falls into this category do not regard themselves as being homosexual; however the term "men who have sex with men"(MSM) is given to this individuals.

2) "Homosexual" can describe a person's sexual preference- i.e., a person whose sexual desire is predominantly directed towards members of the same sex can be said to be homosexual in orientation.

3) "Homosexual" can describe a person's sexual identity – i.e., a person who adopts a sexual life style which is consistent with and self-defined by same sex desire and same sex behavior can be said to have a homosexual identity.

It is important to understand and differentiate between the concepts of sexual identity, sexual orientation and sexual behavior.

Sexual behavior does not correlate entirely with sexual identity and sexual orientation in many of the cases , but it focuses on the description of sexual practices. For example, a married man, self – identified him as a heterosexual man, may still get engage in the sexual behaviors with other men. Such individual can be categorized as MSM, even though he might not seek such intimacy to be considered as sex in his society or culture. However, the term 'MSM' has evolved in many parts of India to now take on meanings of identity as well.

In the Indian subcontinent, the most prominent groups are

1) **HIJRAS** – transgendered MSM, sometimes regarded as a "third sex". They are often castrated, dress as women and are part of a clearly identified social groups, which is tolerated by society but sometimes feared as well.

2) **KOTHIS** – also called as METIS in Nepal, these are MSM who adopt an effeminate (feminine) lifestyle but who nevertheless may be married and father of children.

3) **PANTHIS** – also called as Ta in Nepal, these are masculine men who although passing as ordinary males in the community sometimes have insertive sex with Kothis. They do not self-identity but are labeled or nick-named Panthis by the Kothis.

4) **DOUBLE DECKERS** – men who are both receptive and insertive partners.

There are men who indulge in sex with the men for cash or kind. Male sex workers(MSWs) encompasses all these groups.

In Southeast Asia, there are many groups of MSM, but some of the more prominent and better-known ones include:

1) **KOTOEY** (Thailand and Laos),

2) **KTEUY** (Cambodia) and

3) **WARIA** (Indonesia)

4) **SRAY SROS**(Cambodia)

5) **PROS SAAT**(Cambodia)

However, these identity labels do not always predict specific sexual behavior as male to male sexual practices are often fluid. Other men who privately self-identify as homosexual or a gay (often those who are educated), may still be having sex with both men and women because of family pressures to marry or to have children. Regardless of their actions, MSM who engage in high risk sexual behaviors put themselves and/or their partners at risk for HIV and other sexually transmitted infections (STIs). They need to be counselled regarding how to engage in sexual behaviors with reduced risk of acquiring or transmitting STIs and HIV to themselves or their sexual partners.

CULTURE AND SEXUALITY IN INDIA

Although in Indian culture, heterosexuality has been openly considered the norm, there is much evidence, both historical as well as recent, showing that men in India have and continue to engage in different types of sexual or other relationships. Ancient Indian scriptures as well as more secular texts provide evidence of same-sex (i.e. male-male or female-female) relationships. The Ayurvedic texts, Susruta and Charaka Samhitas, dating from the first century detail taxonomies of gender and sexual variations, including same-sex desire[5]. Scriptures such as the Puranas and Mahabharata among others also provide references of same-sex relations and behaviour[6,7,8,9]. The stigma that has become attached to such relationships and behaviours, has been attributed in part to colonial influences[10,11], family and community attitudes towards marriage and having children. One source of this stigma included the addition of section 377 to the Indian penal code by the British in 1860, which still exists in Indian law. Colonial influences imported a much more repressive attitudes towards sexuality than existed in pre-colonial India[10]. This law criminalized same sex behaviour and has been an ongoing source of discrimination and harassment and has also hindered prevention efforts to combat HIV/ AIDS[12-14]. Recently, the Delhi High Court has ruled against section 377, which will help HIV prevention efforts, although appeals are ongoing and the Supreme Court is now considering the case.

Data from many different surveys across the country show that same sex activity exists and is prevalent across India in both urban and rural areas. Furthermore, MSM are a part of all socio-economic groups and span all religious as well as other social groups. One study done in several villages reported that nearly 10 per cent of single men and 3 per cent of married men engaged in same sex behaviour[15]. Another survey showed that 7 per cent of male college students in Chennai had their first sexual experience with another male[16]. A different sexual behavior survey in Uttar Pradesh reported that approximately 54 per cent of male respondents indicated some type of same sex behavior during their lifetime[17]. Another study conducted at a drop-in center for MSM in Mumbai showed that nearly 23 per cent of MSM were married and that being married to a woman was actually associated with a much higher risk of being HIV positive (23.8% for married men vs. 9.1% for others)[18]. These surveys, as many sexual behaviour surveys are, can be problematic for several reasons, since these did not use probability-based sampling, the true prevalence of these behaviours in Indian society is unknown. Another potential bias is the probable under-reporting of same sex behaviour due to stigma surrounding such behaviours and relationships. However, the point is that same sex behaviours in India are prevalent and warrant attention from the medical community in delivering appropriate health care.

SEXUAL ROLE BEHAVIOR AMONG MSM

Men negotiate sexual partners in a number of different contexts and increasingly through internet. They engage in wide variety of sexual practices such as frottage , oro- genital , oro -anal, penile -anal intercourse , they may also use unique techniques of sado-masochism, water sports , fisting, scatting. “Barebacking” is the term used unprotected anal sex without condom usage and this is usually practiced by some MSMs who feels that condom usage will reduce the pleasure of sex. These sexual practices have more potential for the transmission of HIV and other STIs. “Bug chasers” these are the men who purposefully indulge in these kind of high risk practices,wishing to become infected by HIV so that they should fit in with friends or to remove concern about being infected.

For homosexual male anal intercourse, individual men can play either the insertive or receptive role. Some men consistently perform one or the other, while others perform both. This yields three role subgroups of men: insertive, receptive and versatile as opposed to the two role categories of male and female in heterosexual intercourse. This changes population transmission dynamics, and the impact depends on the prevalence of each role and the relative transmission probabilities of insertive and receptive sex.

DESCRIPTIONS OF PARTNERSHIP TYPES

The types of partnership classifications most often studied in STI/HIV research are “main partner” or “regular partner” versus “casual partner”. The benchmark study of sexuality in the United States, the National Health and Social Life Survey (NHSLS), described only four types of sexual partnerships: marriage, cohabitation, the intention of one or both partners to pursue the relationship further, and the explicit view by the partners of the relationship as short term[19]. There are different types of partners, for both heterosexuals and MSM. This list in a study of MSM recently infected with HIV revealed a large distribution in the types of partnerships reported3 and revealed changes in numbers of such partners and in the practice of risk behaviors within these partnerships following the diagnosis of HIV[20].

USE AND NON USE OF PROTECTIVE BEHAVIORS

Condom use by MSM has long been promoted as the fundamental way to prevent STI/HIV transmission among MSM. For example,among MSM in 17 U.S. cities, about 58% with a main male partner and by 36% with a casual male partner. The pattern is similar for young MSM, with even fewer always using condoms with steady partners than with nonsteady partners. “Barebacking” has been defined as a phenomenon in which some MSM seek unprotected anal sex in spite of and sometimes because of the risk of acquiring HIV.Barebacking has been construed as anal intercourse without condoms with intention, to be contrasted with

just the behavior of anal sex without a condom, and that those who bareback share a social identity. Barebacking has been reported more often by HIV-positive MSM than by HIV-negative MSM, who often reported barebacking with sero-concordant partners. This suggests some reduction in transmission risk that may accompany the barebacking practiced by some HIV-positive MSM. HIV-positive MSM continue risk behavior following their diagnoses and unprotected sex with casual partners has been especially common among MSM on highly active antiretroviral therapy (HAART) although also observed among men with high HIV-1 RNA levels and not receiving HAART. Among MSM in HIV-discordant partnerships97,98 using condoms can signify lack of closeness and trust.

RECREATIONAL DRUG USE

Rates of drug usage such as cigarette smoking , alcohol, substance abuse are higher in MSM when compared to the normal general population. This makes a potential impacts on HIV infected MSMs:

a) This kind of lifestyle behavior is associated with other risky behavior, eg. Increase in partner change and failure of condom usage, b) increase chance of cardiovascular disease and malignancies which are associated with smoking are compounde by HIV infection. C) Illicit drug use for eg. Crack , cocaine , crystal, and methamphetamine, may exaggerate the rate of unsafe sexual practices27. D) injecting the drugs

in unsafe manner increase the risk HIV transmission and hepatitis. Co - infection with hepatitis causes rapid progression of the disease. There are also chances of getting infected with another strains of HIV which will cause additional problems , specially in pertaining to acquiring a resistant virus. E) this kind of lifestyle will lead on to problems with adherence to antiretroviral therapy (ART) and other therapies. F) certain recreational drugs may cause adverse consequences due to metabolism of prescribed drugs. G) drugs which are used for erectile dysfunction or to enhance sexual performance such as sildenafil etc may cause drug interactions with prescribed therapies along with increased transmission of HIV and other STIs.

There is relationship between alcohol and sex among MSM. Alcohol use may serve a unique function in the lives of MSM. Alcohol use among gay and bisexual men can be a reaction to social marginalization (e.g. homophobia, discrimination, violence) resulting from their sexual orientation and may be associated with other mental health issues such as depression, anxiety, and substance use disorders[21]. Harawa et al[22] conducted a qualitative study exploring the ways in which non-gay identified MSM understood the role of drugs and alcohol in sex with men. Four domains were identified that described the role of substance use in sexual encounters: substances as 1) motivators; 2) allowers; 3) rationalizers; and 4) facilitators. While alcohol may be used to deal with men's discomfort regarding their sexual desires, there

are men for whom alcohol is intentionally used to enhance their sexual experiences and to gain a sense of power during the sexual experience[23]. A study of substance use among HIV-positive MSM found that nearly all (90%) of the men used drugs to enhance sexual pleasure, and that drug use dulled negative feelings about living with HIV[24]. Examining the relationship between alcohol and sexual behavior among MSM allows for a more understanding of the ways in which, alcohol may be related to condom use in this group.

SEXUALLY TRANSMITTED INFECTIONS(STIS)

Sexually transmitted diseases (STDs) are diseases that are transmitted by sexual intercourse. The older terminology of "venereal diseases" (VDs) largely has been replaced by “sexually transmitted diseases (STDs)” and more recently by "sexually transmitted infections"(STIs). STIs differs from STDs in that STDs conventionally includes infections resulting in clinical diseases that may involve the genitalia and other parts of the body participating in sexual interaction e.g., syphilis, gonorrhea, chancroid, donovanosis, nongonococcal urethritis, genital warts, herpes genitalis etc. STIs, in addition, includes infections that may not cause clinical disease of genitals, but are transmitted by sexual interaction e.g., all STD’s and hepatitis B, human immunodeficiency virus (HIV), HTLV-1etc. Nowadays, the term STI is preferred , since it covers all the diseases that can be transmitted by sexual intercourse. Sexually transmitted infections (STIs) are more

dynamic than other infections prevailing in the community. MSM are at increased risk for STDs, including emergence of antimicrobial resistance when compared to women and exclusively heterosexual men.

Population level factors such as limited or overlapping social and sexual networks further increase risk of STIs including HIV among MSM. In many cases, concomitant psychosocial health concerns, such as depression, getting easy money for a pleasurable work, illiteracy and unawareness of severity of STIs may predispose MSM to increased risk taking. Miscommunication and misperceptions about HIV serostatus and the presence of STDs may enable some MSM to feel comfortable engaging in unprotected sex16.

The pattern of STIs are different in MSMs than normal heterosexuals. Among heterosexuals the bacterial STIs like syphilis, gonococcal infection etc is declining and the viral STIs like herpes genitalis and condyloma acuminate are showing upward trend. But among MSMs syphilis is found more common than among the heterosexuals which is followed by condyloma acuminate and herpes genitalis . Gonococcal infection comes later in the list of trend in the pattern of STIs.

REASONS FOR HIGH PREVALENCE OF STIS IN MEN WHO HAVE SEX WITH MEN

BIOLOGICAL

1) Semen higher conc of HIV [bodily secretion], more trauma to anal mucosa

2) Penis is penetrative organ

3) Penis is designed to transmit semen (along with anything else in seminal fluid)

4) Highly receptive columnar epithelial surfaces are involved in male to male sex:

   - -Rectal mucosa
   - Anorectal squamo-columnar junction
   - Oropharyngeal and tonsillar mucosa
   - Urethral meatal mucosa
   - Inner surface of prepuce

SOCIOLOGICAL

1) Myths and ignorance abound about male to male sex-e.g., in countries where HIV transmission is predominantly heterosexual, many men believe sex with men is safer.

2) Barrier protection is not needed to prevent reproduction, so condom use is rare.

3) Illegality discourages open expression of male to male love or sexual behavior.

4) Societal stigmatization directly discourages regular open relationship between two males.

5) Societal stigmatization thus indirectly encourages multiple casual partners.

6) Male to male sexual activities are often covert:

- Fleeting opportunistic contacts
- Frequently contacts are anonymous
- Frequent concurrent disinhibiting substance use (especially alcohol)
- Sex may be in dimly lit places, so partners not clearly seen; protection difficult.
- Opportunistic male to male sex work common in homophobic societies.

MEDICAL REASONS FOR POOR CONTROL OF STIS (& HIV) IN MSM

PATIENT - CENTERED

- Shame and guilt
- Lack of self – esteem
- Fear of clinician's disapproval
- Decreased health seeking behavior
- Giving an untrue sexual history if symptomatic

CLINICIAN – CENTERED

- Discomfort with homosexuality
- Ambivalent feelings about MSM
- Judgmental or moralistic
- Irrational fear of contamination from MSM
- Not swabbing the correct anatomical sites
- Ignorance about testing and management of STIs in MSM

HIV & MSM

India has a significant human immunodeficiency infection (HIV) epidemic. The World Health Organization (2007) estimates that there are about 2.5million people currently living with HIV in the country,

the primary route of transmission being sexual transmission. The NACO prevention programs initially targeted to specific risk groups such as female sex workers, migrants, truck drivers, sexually transmitted infection (STI) patients, blood donors, and injection drug users. There was little discussion of the role of male-to-male sex in HIV transmission; consequently, there were hardly any prevention programs targeted toward this risk group. There is little acknowledgement of men whose primary sexual orientation is towards other men in India. This social denial percolates in the health system as well, and thus there is little emphasis to elicit same-sex history in patients presenting to HIV or STI clinics; this resulted in paucity of research in this population. However, recently, there has been an increased recognition of male-to-male transmission of HIV in the country. In response, NACO has initiated behavioral and sentinel HIV surveillance in men who have sex with men (MSM) across various cities in India (NACO, 2008b). The HIV/AIDS epidemic in India can be described in three coexisting phases: (a) the first phase of spread of HIV among the classically recognized high-risk groups; (b) the second phase of spread of HIV to the non-high-risk groups, such as the spouses and children of infected individuals; and (3) the third phase of increased incidence of medical and social complications among those infected. In India, MSM are a part of the high-risk group or the first phase, the prevalence being of the order of more than 10% in a few surveillance sites in the past 5 years

(NACO, 2008a). MSM in India are often married because of existing social norms thus they also form a part of the second phase of HIV epidemic—they represent a 'bridge population' between high-risk MSM networks to the nonhigh-risk group of often monogamous women. Further , the tag of sexual minority adds a dimension of stigma in HIV infected MSM, compromising their health further, and thus fueling the third phase of the HIV epidemic .

PREVALENCE OF HIV AMONG MSM

HIV infection among MSMs has been increasing in recent years around the world , particularly in Asia[25], the percentage of MSM infected with HIV is 10% to 42%[26]. This global trend is being seen in India, with the current estimated HIV prevalence among MSM ranging between 7% to 16.5%[27-29]. This is in comparison with the overall adult HIV prevalence estimated to be 0.31% (0.25%-0.39%) in 2009[27]. 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[30]. The States that have the highest mean HIV prevalence amongst MSM in 2008 are Karnataka, Andhra Pradesh, Manipur, Maharashtra, Delhi, Gujarat, Goa, Orissa, Tamil Nadu and West Benga[31]. 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 HIV prevalence of 6.41 per cent among MSM, although this may be a lower-limit estimate[32]. 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 infected[25,33,34]. We found an 8 per cent prevalence in a sample of 210 MSM in Chennai recruited by peer outreach workers[35]. 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.

MSWs are at higher risk of acquiring HIV because of following reason:

- High number male sex partners
- High substance abuse
- Receptive anal sex
- Lack of condom usage
- High previous history of infections in deprived populations
- Inadequate treatment of those who are having Hiv infection already.
- Lower proportion of accessing to public health services

SEXUAL PRACTICES AND STI/HIV TRANSMISSION

MSM may engage in sexual practices that put them at risk for specific STIs, particularly HIV. Unprotected anal intercourse has been generally shown to be most efficient for sexual HIV transmission with an 8.2/1000 contact risk for unprotected receptive anal intercourse with a known HIV-infected partner, and 0.6/1000 contact risk for unprotected insertive anal sex with a known HIV-infected partner[36]. The relative risks of HIV transmission with partners whose status is unknown will reflect the background HIV prevalence in specific communities and culture.

The relative efficiency of fellatio in transmitting HIV is unclear (because of the preponderance of at-risk men also engaging in anal intercourse). Among MSM followed in the Multicenter AIDS Cohort Study, men who only engaged in receptive oral intercourse and no anal intercourse were identified among the seroconverters[37]. Vittinghoff [36] and colleagues estimated the per contact risk of unprotected oral exposure to the ejaculate of HIV-infected or status unknown partners to be 0.4/1000, which was comparable to their estimate of the risk from unprotected insertive anal sex.

Despite the effects of HAART in lowering HIV concentrations in different compartments, HIV RNA has been detected in the semen[38], rectal secretions[39], and pharyngeal samples[39] of MSM on suppressive

antiretroviral therapy[40]. Reports of increase in sexually transmitted, drug-resistant HIV also suggest that HAART alone will not necessarily prevent new infections from occurring in MSM. Other cofactors associated with increased HIV transmission among MSM include the use of volatile inhaled nitrates and being uncircumcised. Other STDs are also efficiently transmitted by anal intercourse, including syphilis, gonorrhea, chlamydia infection, herpes simplex virus, and hepatitis B. Many of these pathogens may also be more efficiently transmitted through fellatio than HIV. Human papillomavirus (HPV) is readily transmitted without anal penetration, and may be autoinoculated from the penis to the rectum in sexually active MSM. Other nontraditional STDs may be readily transmitted by specific MSM practices, e.g., enteropathogens like Shigella or Salmonella may be spread by oral–anal intercourse ("rimming") or digital–anal contact ("fisting") because of the low pathogen inoculum needed to cause infection.

SYPHILIS

Although national syphilis elimination efforts have proven very successful in many communities in recent years[41], reports of increasing rates of new infections among MSM continue to occur[42], with disproportionate numbers of newly diagnosed syphilis patients being HIV coinfected[43]. Almost one-quarter (23%) of HIV-infected MSM accessing services at an STD clinic participating in the U.S. Gonorrhea Isolate Surveillance Program (GISP) had a reactive syphilis serology

compared to 8% of MSM who were HIV uninfected or whose serostatus was unknown[44]. Overall, seroreactivity ranged from 4% to 11% by clinic location. The male-to-female primary and secondary syphilis rate ratio increased from 1.2 in 1996 to 5.7 in 2005, primarily due to the resurgence of syphilis among MSM.55 Futhermore,CDC data reveal almost a tripling in median syphilis seropositivity from 4% in 1999 to 11% in 2005 among MSM visiting the STD clinics participating in the national MSM prevalence monitoring project.55 . The increased prevalence ofsyphilis in HIVcoinfected MSM may also reflect "serosorting," i.e., careful selection by HIV-infected MSM of other infected partners with whom they can have unprotected sex and/or increased susceptibility to syphilis among HIV-infected patients. Since oro-pharyngeal chancres may transmit infectious syphilis to insertive partners engaging in oral sex,this practice that is considered safe in relation to HIV transmission may result in new syphilis infections,and safer sex education should take this risk when prevention messages are developed for MSM.

GONORRHEA

Gonorrhea rates have also increased in recent years among urban MSM in developed countries, paralleling the rises seen with syphilis[45,46]. Gonorrhea may be transmitted by fellatio,as well as insertive or receptive anal intercourse, although anal sex is the most efficient means of transmission. According to the GISP, the proportion of positive test

results for MSM increased from 4% in 1988 to more than 20% in 2005. The median clinic test positivity rate was 11% for urethral gonorrhea,8% for rectal gonorrhea,and 7% for pharyngeal gonorrhea . Quinolone-resistant gonococci have been increasingly isolated from MSM, constituting 29% of specimens from MSM in CDC's GISP in 2005 and necessitating the use of expanded spectrum cephalosporins for the treatment of gonococcal infections in MSM, and the recommendation that quinolones no longer be used to treat any gonococcal infection in MSM.

HERPES SIMPLEX VIRUS TYPE 2

Herpes simplex virus type 2 (HSV-2) is extremely prevalent in the general population worldwide[47-49], with more than one fifth of the U.S. population being infected with HSV-2[50,51]. The prevalence is much greater in sexually active MSM, with more than half of any survey of MSM demonstrating seroreactivity. HIV has been readily detected by PCR from HSV-related male genital ulcers of 70% of a certified cohort in one series[52], consistent with data supporting its role in potentiating HIV transmission. Large public health trials are underway to assess whether the ongoing use of acyclovir—an HSV-2 thymidine kinase inhibitor—can protect HSV-2-infected, HIV uninfected high-risk individuals from HIV acquisition, or decrease the likelihood of HIV transmission by HIV-1/HSV-2 coinfected individuals.

HUMAN PAPILLOMAVIRUS (HPV):

It is thought to be the most common STD in the United States and other developed countries[53], with more than 85% of HIV-infected MSM being HPV coinfected[54-56] and the prevalence of HPV in HIV-uninfected MSM being consistently greater than 50%.HPV is primarily spread between male sexual partners through insertive or receptive anal intercourse, but may also be transmitted by oral sex,108 digital–rectal contact and scrotal contact. Reports of anal cancer in HPV-infected MSM have led to suggestions that routine anal screening for atypia and proactive management of precancerous lesions should be part of the primary care of MSM engaging in anal intercourse.

CDC RECOMMENDATIONS FOR STD SCREENING FOR MEN WHO HAVE SEX WITH MEN:

Annual screening of sexually active MSM for:

- HIV serology, if HIV seronegative or not tested within the previous year
- Syphilis serology
- A test for urethral infection with N. gonorrhoeae and C. trachomatis in men who have engaged in insertive intercoursea during the preceding year

- A test for rectal infection with N. gonorrhoeae and C. trachomatis in men who have had receptive anal intercourse a during the preceding year

- A test for pharyngeal infection with N. gonorrhoeae and C. trachomatis in men who have acknowledged participation in receptive oral intercoursec during the preceding year; testing for C. trachomatis pharyngeal infection is not recommended.

- Some specialists would consider type-specific serologic tests for HSV-2, if infection status is unknown.

- Routine testing for anal cytologic abnormalities or anal HPV infection is not recommended until more data are available on the reliability of screening methods, the safety of and response to treatment, and programmatic considerations

- More frequent STD screening (i.e., at 3–6months intervals) is indicated for MSM who have multiple or anonymous partners, have sex in conjunction with nonprescription or nonmedically indicated drug use, or whose sex partners participate in these activities

PUBLIC HEALTH PRACTICE AND MSM

Several investigators have called attention to the need for structural and environmental interventions to promote safer sexual

practices among MSM[57,58] . There are no definitive public health data that demonstrate that specific local structural interventions which led to reductions in rates of STDs. However, it may be argued that criminalization of homosexual behavior has never eradicated the desire to engage in specific practices. Punitive legal constraints and homophobic social environments could serve to drive such activity underground, making it harder for public health officials to identify sexual contacts. The governments of several European countries, Canada, and Australia have been able to work with the gay community to create culturally sensitive legal and public-health environments, allowing for the effective detection and treatment of STDs and HIV infection; however, none has seen a diminution in the recent increases in new infections among MSM.

GAY BOWEL SYNDROME

Gay bowel syndrome was a medical term first used by Henry L Kazal and colleagues to describe the various sexually transmitted perianal and rectal diseases and sexual traumas seen in Kazal's proctology practice, which had many gay patients. The term was first used in the pre-HIV era, by Kazal et al. in 1976. The term was not specific to any particular disease or infection, and was used clinically to describe proctitis and a variety of other complaints caused by a wide range of infectious organisms. Reported causes include herpes viruses, syphilis, gonorrhea, chlamydia, campylobacter, and shigellosis, as well

as a variety of protozoal infections. The concept of "gay bowel syndrome" was later expanded to include various opportunistic cancers. Transmission of disease was considered to take place by two routes: anal sex, and fecal-oral route. Sometimes, difficulty in specifying the method may be a result of transmission by both methods.

METHODS AND MATERIALS

SOURCE OF DATA

MSM attending sexually transmitted disease OPD

PLACE OF STUDY

Govt. Stanley Medical College, Chennai

TYPE OF STUDY

Cross Sectional Observational Study

TIME OF DURATION

1 year (August 2016 – August 2017)

SAMPLE SIZE

100

INCLUSION CRITERIA

- Men having sex with men of:
- >18 years of age
- Anoinsertive & receptive
- Oroinsertive & receptive
- >1partner
- Transgenders(TGs)
- Bisexuals

EXCLUSION CRITERIA

- Single male partner
- Last contact >10 years

PROCEDURE

After elaborate history taking and clinical examination of each individual, written and informed consent, under aseptic precautions peripheral blood was taken and sent for :

- HIV 1 and 2(HIV1+2 immunodot test kit , ½ trispot kit ,SD BIOLINE)
- RAPID PLASMA REAGIN test (SPAN)
- TPHA (if RPR is positive)
- Hepatitis B surface antigen (HBsAg)
- Hepatitis C antibodies (Anti HCV)
- IgG Antibodies against HSV 1 and 2 (Calbiotech ELISA)
- Additional investigations, such as dark ground microscopy, Tzanck smear, gram staining leishaman staining, and KOH smears, biopsy were carried out wherever required.

I KIT

HIV 1 + 2 IMMUNODOT TEST KIT (COMBAIDS):

Dot immunoassay for the detection of antibody to HIV 1 and / or 2

PRINCIPLE

Dot immunoassay employs the same principle as Enzyme Immunoassay (EIA) whereby the immobilized antigen- antibody complex is visualized by the means of colour producing (chromogenic) reaction. In EIA the colour is developed by a coupled reaction between enzymes, substrate and chromogen where as in Combaids – HIV 1 + 2 immunodot test kit the coloured endpoint is developed by a Colloidal Gold- Protein – A

Signal Reagent4,5. Each tooth of the Comb is spotted with a circular spot , one near the tip with an optimally standardized blend of HIV 1 and HIV 2 recombinant antigens and / or synthetic peptides (Test spot), and the other spot, a little above the first spot is spotted with "Control Reagent" (Control spot). When incubated with a specimen containing HIV 1 and /or 2 antibodies, these antibodies bind directly to the HIv antigens present in the "Test Area" on the tooth of the comb. The immune complex is directly visualized after incubation with Colloidal Gold- Protein - A – Signal Reagent. A positive result is indicated by the presence of pink coloured spot / dot in the "Test area"near the tip of the tooth of the comb where antigens are spotted. Built in control is visualised separately in the upper part of the tooth (Control Area), where control reagent has been spotted, serving as the

procedural control. A pink color spot or dot will always appear at “Control Area” during the test after application of the test sample detecting presence of human immunoglobulins(IgG), irrespective of the presence or absence of HIV specific antibodies in the specimen.

SAMPLE

Whole blood, Serum or Plasma can be used.

(Whole blood should always be used freshly collected in EDTA/ Heparin / citrate anticoagulant)

REAGENTS

Reagent 1: washing buffer

Reagent 2 : signal reagent

Reagent 3 : sample diluent

Reagent 4 : negative control

Reagent 5 : positive control

Reagent 6 : antigen and control reagent coated combs

SETTING UP THE TEST

Washing solution: Dilute (reagent 1) the concentrated washing buffer to 1:5 with distilled water by adding 2ml of concentrated washing buffer to 8ml distilled water, taking care to avoid a foaming. Fill the wash reservoir with washing solution.

ASSAY PROCEDURE

All kit components and sample to be tested should be brought to room temperaturebefore starting the test. Clearly mark all sample to be tested and record their identity before starting the test.

1) Mark the samples number on the microtest wells and add two drops of Sample diluent (reagent 3) to each microtest well that will be used for sample or controls.

2) Add two drop(0.1ml) of sample to each of the above wells containing sample diluent. Mix the sample with diluent by repeated aspirating and expelling or stirring with disposable plastic dropper tip. Record the position and identity of samples or controls as they are needed.

3) carefully remove the comb (reagent 6) from the blister pack and place it into rows of corresponding microtest wells.

4) Place the comb into the first row of diluent samples by holding the comb vertically with the teeth pointing down. Set the timer for10min and the start the timer. Incubate exactly for 10 minutes at room temperature .

5) In the mean time, dispense 4 drops (0.2ml) of signal reagent (reagent 2) into each of the another set of unused microtest wells.

6) Remove the comb from the sample containing wells and blot the tips of the teeth on absorbent material. We should not blot the reactive surface of the comb. Hold the comb vertically with tips pointing down and rock them forward and backward in the wash solution for a total of ten minutes. Blot the tips of the arms again.

7) Place the comb into the well containing signal reagent (reagent 2). Incubate exactly for 10 minutes at room temperature. After incubation, repeat thewashing procedure as described in step 6.

8) Place the comb on a clean surface, reactive side up. Do not blot or wipe the surface of the comb. Allow the comb to air dry completely before reading the results. 9) use the reference color index for SPIA to compare and interpret the results.

INTERPRETATION

The surface of the comb should be perpendicular to the eyes and should be viewed at 90 degree angle to avoid viewing as a faint , uncolored spot / dot which does not represent the true reactivity.

REACTIVE

- Appearance of pink colored dot or spot on both “test area” and “control area” indicate positive results as shown in picture.

- The positive results on test spot/ dot shows either HIV 1or HIV 2 or both together.

- However , intensity of spot / dot shall be equal to more than 1.0 color index when compared with references color index for SPIA.

NON REACTIVE

Absence of pink spot/ dot in a test area indicate negative result as shown in the picture. However in such case pink spot / dot shall be present in “control area”.

INDETERMINATE RESULT

The test should be considered as “indeterminate” in case of faint colored spot / dot in test area having color intensity between 0.00 and 1.0 color index. In such cases it is recommended to repeat the test to confirm the results, if the results is still “indeterminant”, fresh sample should be drawn often after 4-8 weeks and retested again.

INVALID RESULTS

The test is to be considered as “invalid” if no pink coloured spot / dot is visible in “control area” irrespective of presence or absence of pink colored spot / dot in the test area. In such cases the test should be repeated using a new comb and fresh specimen.

II KIT:

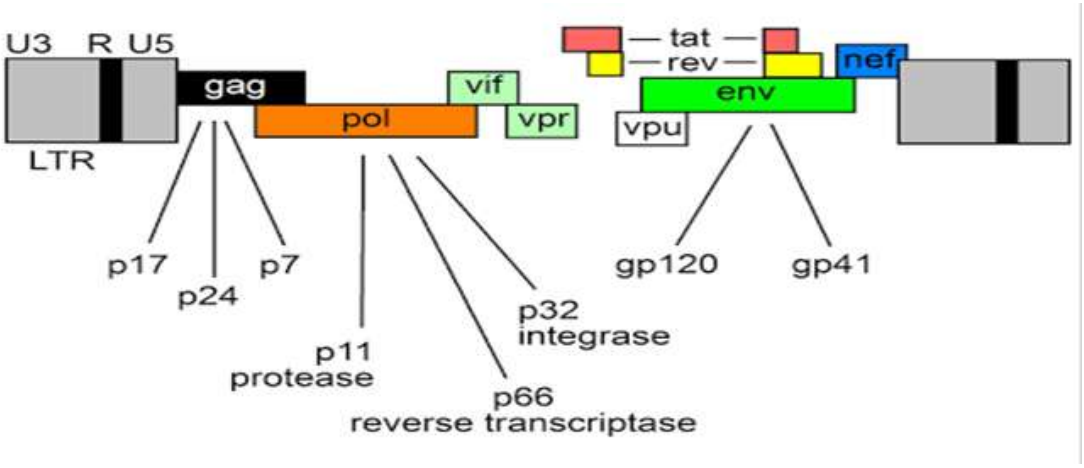
HIV – 1/2 TRISPOT TEST KIT

(A RAPID TRISPOT TEST TO DETECT ANTIBIOTICS TO HIV 1 & 2 IN HUMAN SERUM & PLASMA)

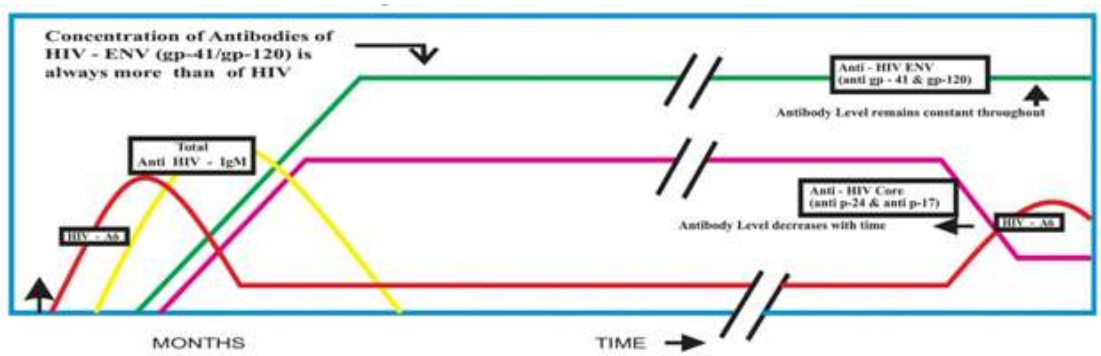
HIV – 1/2 TRISPOT is an immune concentration based assay for detection of antibiotics to HIV 1 & 2 in human serum & plasma.

INTRODUCTION

It is an immunoassay which employs r- protein for the detection of antibodies to HIV in human serum and plasma. These proteins, which are corresponding to highly antigenic segments of both the structural and non-structural proteins of the HIV constitute the solid phase of antigenic absorbent. The use of r-proteins offers the advantage of high degree of specificity and sensitivity due to multiple epitopes. Serological cross reactitivity between HIV-1 and HIV-2 has been shown to be highly variable from sample to sample. This variability necessitates the inclusion of antigens to both HIV-1 and HIV-2 for the detection of HIV-1 and HIV-2. The HIV genome has outer structural (env-gp120, gp41), inner structural (gag p17, p24, p7, p6), pol-viral enzymes (protease, reverse transcriptase, integrase) and regulatory proteins (Tat, Rev, Vif, Vpu, Vpr, Nef) and long terminal repeats on either end (fig 1)



It utilizes a unique combination of HIV1 & 2 antigens of the virus to selectively detect all subtypes of HIV-1 & 2 Virus in human serum/plasma with a high degree of sensitivity and specificity. The level of different type of antibodies and antigens of HIV in blood is as shown in (Fig. 2)



2 **Level of different type of antibodies and antigens of HIV in blood**

TEST PRINCIPLE

HIV-1 & HIV-2 antigens (HIV-1 & HIV-2) and a Control antigen (C) are immobilized on a porous immuno filtration membrane. Sample and the reagent pass through the membrane and are absorbed into the underlying absorbent pad. As the patient's sample drains through the

membrane, HIV antibodies if present in serum / plasma, bind to the corresponding immobilized antigens. Unbound serum / plasma proteins are washed off in the subsequent washing step. Addition of the protein-A conjugate results in binding of HIV to give distinct Red Spot near the test region (HIV-1 & HIV-2). At the control region (”C”) a “Built in-Quality Control Spot” has been coated to confirm the proper functioning of the device, reagent and correct procedural application.

KIT CONTENT

- ❖ Test device
- ❖ Buffer soliution
- ❖ Gold conjugate
- ❖ Droppers
- ❖ HIV 1 & 2 positive control
- ❖ HIV 1 & 2 negative control

SPECIMEN PROCESSING

HIV-1/2 TRISPOT Test works best when used with fresh samples, however the frozen or viscous samples can also perform well if the following instructions are strictly adhered to A. Frozen samples : (I) Allow the sample to thaw in a vertical position in the rack. Mix the sample thoroughly. If particles are seen, allow them to settle at the

bottom or if a centrifuge is available, the sample can be centrifuged at 5,000 r.p.m. for 15 minutes. (ii) Insert the dropper just below the top surface of the sample and withdraw two drops of the sample. B. Thick or viscous samples : Whenever possible, clear specimen should be used.However, viscous, thick or turbid samples which may sometimes take more than 40- 60 seconds to flow through the membrane should be centrifuged at 5,000 r.p.m. for 15 minutes and retested on a fresh device to avoid inconsistent results.

TEST PROCEDURE

1) Bring all the reagents. devices and specimens to room temperature (25+5°C).

2) Add 2 drops of buffer solution to the test device.

3) Add 2 drops of either serum or plasma.

4) Add 4 drops of buffer solution.

5) Add 2 drops of gold conjugate.

6) Add 4 drops of buffer solution. Reading of the Results should be done immediately. Do not read after 5 minutes.

RESULTS

Interpretation of Results

1. NEGATIVE: If only one red spot (control spot) appears at the control region "C" indicates that the specimen does not contain antibodies either to HIV-1 or HIV-2. (Fig. 3) 2. POSITIVE: (a) If two red spots (Control spot and HIV-1 or HIV-2 Spot) appear at the control region "C" and test region HIV-1 and/or HIV-2 indicates that the specimen is reactive for antibodies to HIV-1 and/or HIV2. (Fig. 4) (b) If three red spots (Control. HIV-1 & HIV-2 Spot) appear at the control region "C" and test region HIV-1 & HIV-2 indicates that the specimen is reactive for antibodies to HIV-1 & HIV-2.(Fig .5). 3) INVALID RESULT: If no spot appears after the completion of test. either with Clear background or with complete reddish background the test indicates ERROR. (Fig. d) This may indicate a procedural error or deterioration of specimen / reagents or particulate matter in the specimen. The specimen should be retested on a fresh device.

Fig-3

Fig-4

Fig-5

3RD KIT

THE 3RD GENERATION OF ONE STEP ANTI HIV 1 / HIV 2 TEST

EXPLANATION OF THE TEST

It is an immunochromatographic (rapid test), qualitative test for the detection of antibodies to all isotypes (IgG, IgM, IgA) specific to

HIV-1 including subtype-O and HIV-2 simultaneously in human serum, plasma or whole blood. The SD BIOLINE HIV 1/2 3.0 test contains a membrane strip, which is precoated with recombinant HIV-1 capture antigen (gp41, p24) on test line 1 region and with recombinant HIV-2 capture antigen (gp36) on test line 2 region respectively. The recombinant HIV-1/2 antigen (gp41, p24 and gp36)-colloid gold conjugate and the sample move along the membrane chromatographically to the test region (T) and forms a visible line as the antigen-antibody gold particle complex forms with high degree of sensitivity and specificity . The Test line and control line in the result window have been clearly label : “1” for test line 1 and “2” for test line 2 and “C” for Control line. Both test line and control lines in the result window are not visible before applying any sample. The Control line is used for procedural control and should always appear if the test procedure is performed correctly. It is a rapid, qualitative test for the detection of antibodies to all isotypes(IgG, IgM, IgA) specific to HIV-1 and HIV-2 simultaneously in human serum, plasma or whole blood.

Materials Provided / Active ingredients of main components

1) The kit contains the following items to perform the assay.

- Test devices individually foil pouched with a desiccant
- Assay diluents

- 20µl capillary pipettes(Option), Lancets (Option)

2) Active ingredients of main components

- 1 test strip included ; Gold conjugate (as main component) : Recombinant HIV-1 gp41, p24, HIV-2 gp36 antigen – gold colloid(1±0.2µg), Test line 1 (as main component) : Recombinant HIV -1 antigen (gp41, p24) (0.625±0.125µg), Test line 2 (as main component) : Recombinant HIV -2 antigen (gp36) (0.5±0.1µg), Control line : Goat anti-HIV serum (0.75±0.15µg)

- Assay diluents : 50mM Tris-HCl Buffer, Sodium azide(0.02w/v%)

Specimen collection, storage and precaution

Whole blood [Collection by venipuncture or using lancet]

INTERPRETATION OF THE TEST

1) A color band will appear in the left section of the result window to show that the test is working properly. This band is control line (C).

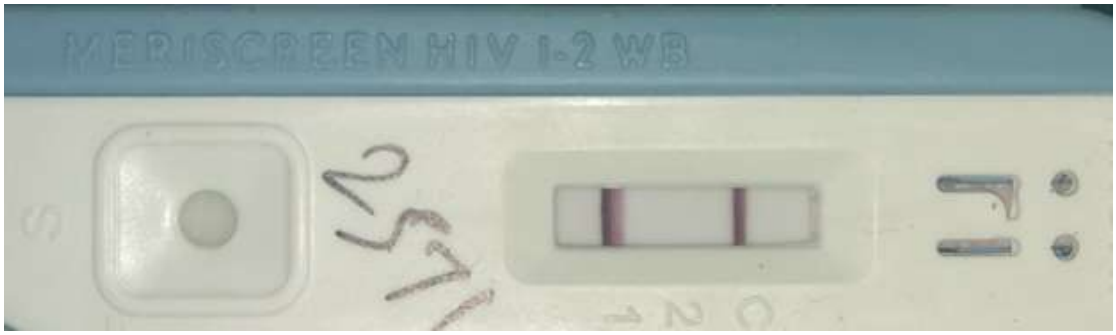
2) Color bands will appear in the middle and right section of the result window. These bands are test line 2 and test line 1 (2, 1).

NEGATIVE RESULT

The presence of only control line (C) within the result window indicates a negative result.

POSITIVE RESULT

The presence of two lines as control line (C) and test line 1 (1) within the result window indicates a positive result for HIV-1. (FIG-6).



- The presence of two lines as control line (C) and test line 2 (2) within the result window indicates a positive result for HIV-2.

- The presence of three lines as control line (C), test line 1 (1) and test line 2 (2) within the result window indicates a positive result for HIV-1 and/or HIV-2.

    - If the color intensity of the test line 1 is darker than one of test line 2 in the result window, you can interpret the result as HIV-1 positive.

- If the color intensity of the test line 2 is darker than one of test line 1 in the result window, you can interpret the result as HIV-2 positive.

Caution: Although a positive result for HIV-1 and HIV-2 in one patient is a rare case, it's possible as there is an homology in the amino acid sequence between HIV-1 and HIV-2. To determine the virus type or diagnose a co infection accurately, you must perform a supplementary test as Western Blot etc.

INVALID RESULT

No presence of control line (C) within the result window indicates an invalid result. The directions may not have been followed correctly or the test may have deteriorated. It is recommended that the specimen be retested.

RPR (RAPID PLASMA REAGIN) KIT – SPAN (FLOCCULATION TEST)

PRINCIPLE :

RPR test is a modified version of Wassermann's reaction in which the antigens coated with carbon particle are allowed to react with the sample and if the antibodies for syphilis are present the flocculation will occur on the card due to aggression of carbon particle. If the sample does not contain the antibody then there will not be any flocculation and it will give clear back ground.

CLINICAL SIGNIFICANCE

Syphilis is caused by the organism Treponema palladium palladium .

SAMPLE

Fresh serum or plasma separated by using EDTA, heparin or oxalate as anticoagulant is preferred. Venostasis to be avoided.

PROCEDURE

Rapid plasma regain test are performed on unheated serum or plasma with modified antigen suspension with addition of:

Choline chloride, EDTA .charcoal.

QUALITATIVE TEST:

- Place 0.05ml unheated serum onto a 18mm circle of test card .
- Spread serum with stirrer to fill entire circle.
- Add 1 drop (1/60ml) RPR card antigen to each test area containing serum.
- Do not stir.
- Place the card on rotator with humidifier cover.
- Rotate 8 min at 100rpm.
- Read test without magnification immediately after rotation.
- Read the results as follows.

INTERPRETATION OF RESULT

Definitive clumps: Reactive (R)

No clumps: Non-reactive (NR)

QUANTITATIVE TEST

Do same as above with doubling dilution of serum with 0.9% saline like 1:1, 1:2, 1:4 etc.

LIMITATIONS

The cardiolipin antigens used in RPR test may tend to give Biological false Positive (BFP) reaction in the conditions like malaria, lepromatous leprosy, collagen disease, rheumatoid arthritis, Infectious mononucleosis, rubella, mumps, measles leptospirosis, relapsing fever, ratbite fever etc. In such a condition a positive reaction should be confirmed by other treponemal tests like TPHA (Treponema pallidum heamagglutination test), TPI (Treponema pallidium immobilisation), FTA (fluorescent Treponemal Antibody) test .

1:4 dilution reactivity (FIG-7)

TPHA KIT
(TREPONEMA PALLIDUM HEAMAGGLUTINATION TEST)

Treponema pallidum Hemagglutination Assay (TPHA) is a specific treponemal test for the serologic diagnosis of syphilis, a sexually transmitted infection caused by a Spirochetes, Treponema pallidum. Based on the principle of passive haemagglutination, this test detects anti-treponemal antibodies (IgG and IgM antibodies) in serum or CSF. TPHA is a good primary screening test for syphilis at all stages beyond the early primary stage.

PRINCIPLE

The test sample is diluted in absorbing diluent to remove possible cross-reacting heterophile antibody and to remove, block, or absorb potentially cross-reacting, nonpathogenic treponemal antibodies. Sera containing antibodies to T. pallidum react with erythrocytes (chicken or avian) sensitized with sonicated T. pallidum, Nichols strain (the antigen), to form a smooth mat of agglutinated cells in the microtiter tray well. If antibodies are not present the cells settle to the bottom of the tray well, forming a compact button of unagglutinated cells.

REAGENT

1) Test Cell suspensions: Preserved RBCs treated with tannic acid and coated with T. pallidum antigen.

2) Control cell suspension: Preserved RBCs (without immobilized T. pallidum antigen)

3) Buffer: Phosphate buffered saline solution containing adsorbers (used to remove possible cross-reacting heterophile antibodies).

4) Positive Control serum: Human serum containing antibodies against T. pallidum. Ready for use. This will give an equivalent titer of 1/640 to 1/2560 with the quantitative test.

5) Negative Control serum: Human serum free of antibodies against T. pallidum

PROCEDURE

Before performing the test procedure, bring the sample, diluent, control and test cells in room temperature (25 – 30º C). For each qualitative test, a test card with three wells is needed.

A: Dilution of serum sample

1) Add 10µL of patient's serum in the first well (say well A).

2) Add 190 µL of diluent (provided by the manufacturer).

3) Mix the content well using a micropipette; we will use this diluted serum later.

B: Testing of serum sample for the presence of specific antibodies

1) Add 75µL of "control cells" to well B and 75 µL of "test cells" to well C.

2) Add 25µL of diluted serum on each B and C well.

3) Shake the plate gently to mix the contents thoroughly.

4) Cover the plate and protect to direct sunlight, heat and any source of vibration.

5) Incubate 45-60 minutes at room temperature.

6) Read the test results and interpret.

Positive control and negative control should be run along with the test serum

RESULTS AND INTERPRETATION

Results	Test cells	Control cells
Strongly Reactive	Full cell pattern covering the bottom of the well	No agglutination tight button
Weakly Reactive	Cell pattern covers approx. 1/3 of well bottom	No agglutination tight button
Indeterminate (Equivocal)	Cell pattern shows a distinctly open centre	No agglutination tight button
Nonreactive	Cells settled to a compact bottom, typically with a small clear center	No agglutination tight button

If the controls (positive control and negative control) do not give the expected result, all assays performed in that batch are invalid and must be tested again.

FALSE POSITIVE RESULTS

Although TPHA test is highly specific, false positive results have been known to occur in patients suffering from leprosy, infectious mononucleosis and connective tissue disorders. For confirmation FTA-ABS test should be used.

HBSAG AND ANTI- HCV

Qualitative analysis is done by using ELISA method.

HSV (HERPES SIMPLEX VIRUS) KIT: (CALBIOTECH KIT FOR HSV 1 & 2 IGG ELISA)

INTENDED USE

The Calbiotech HSV-1 and 2 IgG ELISA Kit is intended for the detection of IgG antibody to HSV-1&2 in human serum or plasma.

SUMMARY AND EXPLANATION

HSV-1 and 2 are virtually identical, sharing approximately 50% of their DNA and have over 80% of common antigens. Both types infect the body's mucosal surfaces, usually the mouth or genitals, and then establish latency in the nervous system. For both types, at least two-thirds of infected people have no symptoms, or symptoms too mild to notice. However, both types can recur and spread even when no symptoms are present. HSV type 1 is the cause of most orofacial herpes and HSV encephalitis; type 2 is the primary cause of initial and recurrent genital herpes and neonatal HSV. Reactivation of latent HSV infection is a frequent complication of immunosuppression due to cancer, transplantation and AIDS. Asymptomatic genital shedding of HSV-2 is more common than HSV-1 and occurs more frequently during the first 3 months after acquisition of primary type 2 disease than during later periods. The presence of HSV IgG antibody is indicative of previous exposure A significant increases in HSV IgG is an indicative of reactivation, current or recent infection. IgM antibody is present after primary HSV infection.

PRINCIPLE OF THE TEST

Diluted patient serum is added to wells coated with purified antigen. IgG specific antibody, if present, binds to the antigen. All unbound materials are washed away and the enzyme conjugate is added to bind to the antibody-antigen complex, if present. Excess enzyme conjugate is washed off and substrate is added. The plate is incubated to allow the hydrolysis of the substrate by the enzyme. The intensity of the color generated is proportional to the amount of IgG specific antibody in the sample.

REAGENT PREPARATION

Prepare 1X Wash buffer by adding the contents of the bottle (25 ml, 20X) to 475 ml of distilled or deionized water. Store at room temperature (18-26 °C).

PROCEDURE

Bring all specimens and kit reagents to room temp (20-25 °C) and gently mix.

1. Place the desired number of coated strips into the holder.

2. Negative control, positive control, and calibrator are ready to use. Prepare 1:21 dilution of test samples, by adding 10 µl of the sample to 200 µl of sample diluent. Mix well.

3. Dispense 100 µl of diluted sera, calibrator and controls into the appropriate wells. For the reagent blank, dispense 100µl sample diluent in 1A well position. Tap the holder to remove air bubbles from the liquid and mix well. Incubate for 20 minutes at room temperature.

4. Remove liquid from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbance paper or paper towel.

5. Dispense 100 µl of enzyme conjugate to each well and incubate for 20 minutes at room temperature.

6. Remove enzyme conjugate from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbance paper or paper towel.

7. Dispense 100 µl of TMB substrate and incubate for 10 minutes at room temperature.

8. Add 100 µL of stop solution.

9. Read O.D. at 450 nm using ELISA reader within 15 min. A dual wavelength is recommended with reference filter to 600-650 nm.

Cut Off Value

Calibrator OD x Calibrator Factor (CF).

Ab (Antibody) Index = the O.D. value of each sample by cut-off value.

Validity

The O.D. of the Calibrator > 0.250.

The Ab index for NC < 0.9

The Ab Index for PC > 1.2

INTERPRETATION

The following is intended as a guide to interpretation of HSV-1 IgG test results; each laboratory is encouraged to establish its own criteria for test interpretation based on sample populations encountered.

Antibody Index Interpretation :

- <0.9 - No detectable antibody to HSV-1 & 2 IgG by ELISA.
- 0.9-1.1 - Borderline positive.
- >1.1 - Detectable antibody to HSV-1 & 2 IgG by ELISA.

STATISTICAL ANALYSIS

The collected data were analysed with IBM.SPSS statistics software 23.0 Version.To describe about the data descriptive statistics frequency analysis, percentage analysis were used. To find the significance in categorical data Chi-Square test and Fisher's exact test was used. In both the above statistical tools the probability value .05 is considered as significant level.

RESULTS

Demographic profile

Out of 100 MSMs, 64 patients belongs to the age group of 20-30 years followed by 32 patients who belongs to the age group of >30 years. The minimum age was found to be 18 years and the maximum age found was 46 years. TABLE 1.

Age	Number
< 20 years	4
20-30 years	64
>30years	32
Total	100

Of total, 9 patients were illiterate, 10 patients had completed primary school education, 63 patients had completed secondary and higher secondary education i.e from 8^{th} -12^{th} standard, and 18 patients had completed degree. (TABLE 2).

Education status	Number
Illiterate	9
Primary education (<8th std)	10
8th-12th std	63
Degree	18
Total	100

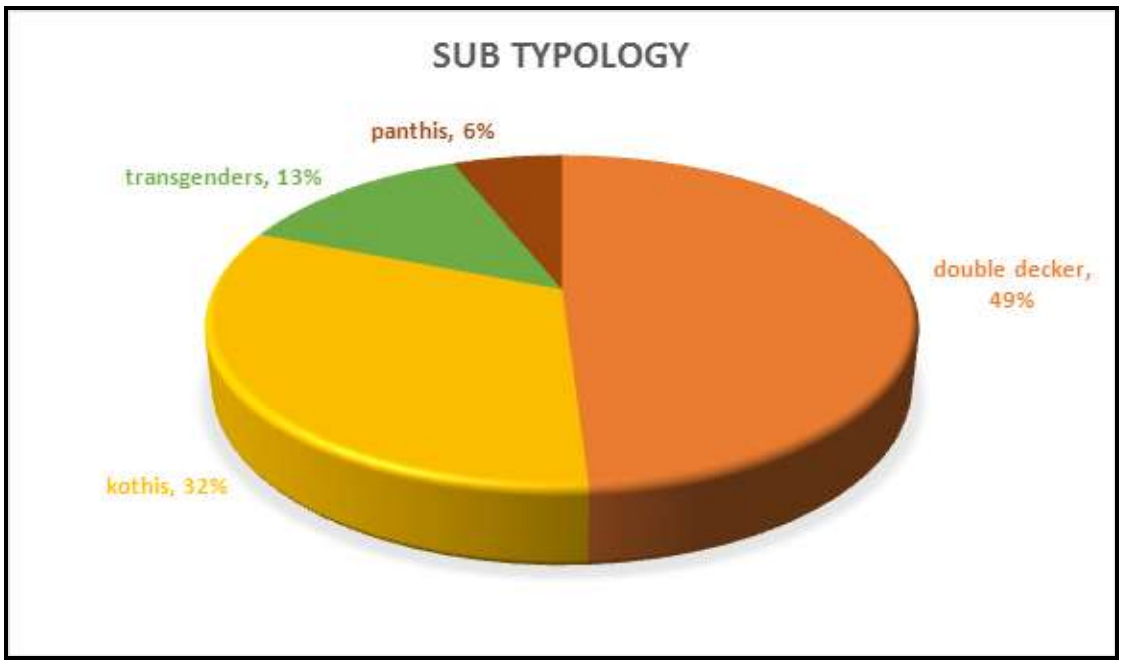
Occupation among MSMs varied from:.(TABLE3).

OCCUPATION	NUMBER
House keeping	15
Coolie	28
Male sex worker (MSWs)	25
Other (carpenter, driver, caterer, educator)	32
Total	100

Regarding Marital status: .(TABLE 4).

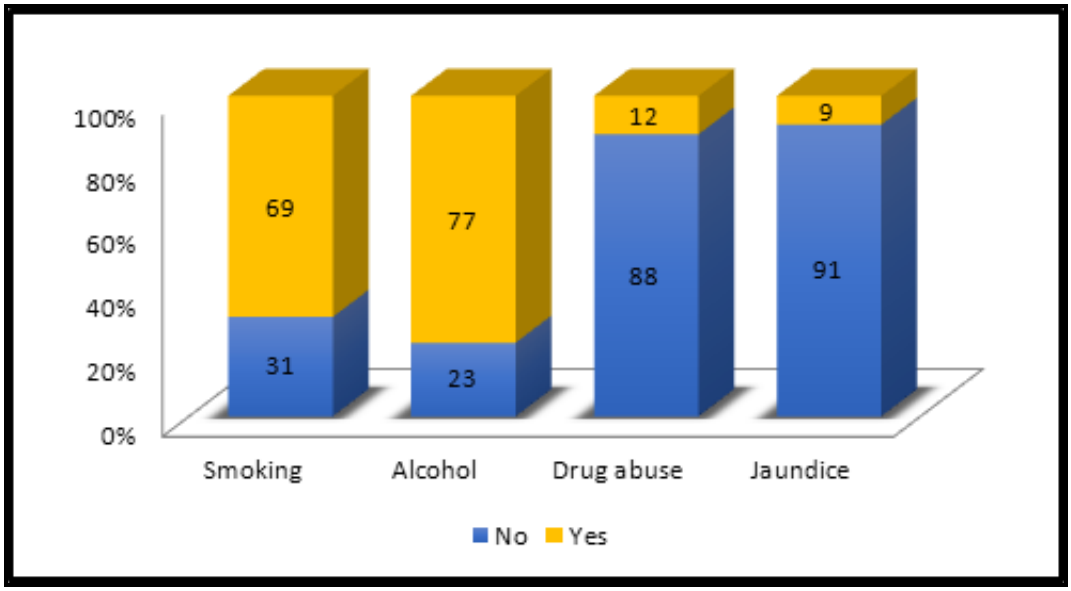
Marital Status	Number
Unmarried	70
Married	30
Total	100

Double-decker (49) was the commonest sub-typology of MSM, followed by Kothis (32), TGs (13) and Panthis (6) respectively.(FIG-8)



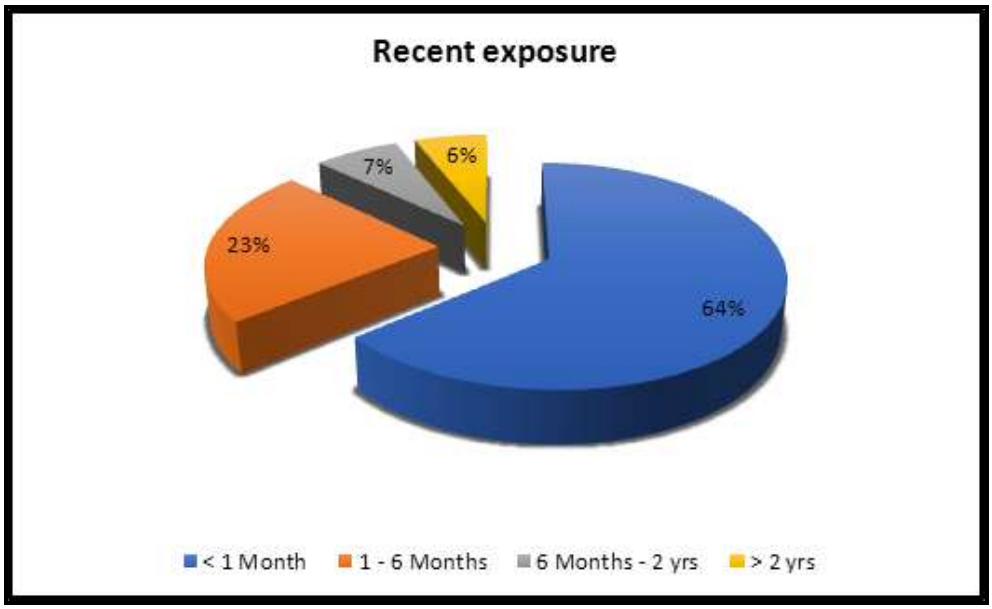
RISK FACTORS PROFILE

Out of 100, 77 patients were alcoholic and 69 were smokers.12 had history of intravenous drug abuse and 9 had a history of jaundice.(FIG-9). Blood transfusion was done in 2 patients.



SEXUAL BEHAVIOR PROFILE

Of total, 64 had history of recent exposure with in 1 month duration , 23 patients had within past 1-6 months of duration. (FIG-10)



The initiation of exposure of sex is most common in the age group of 16-20 yrs (55), followed by 21-25 yrs (32). 4 patients had their first exposure at the < 16 yrs of age. Out of 4 ,three had a history of child abuse. (TABLE-5).

Exposure since (years)	Number
<16	4
16-20	55
21-25	32
26-30	4
>30	5
Total	100

Regarding status of partner, 53 patients had recent exposure with unknown partners and 47 had with known partners. (TABLE-6)

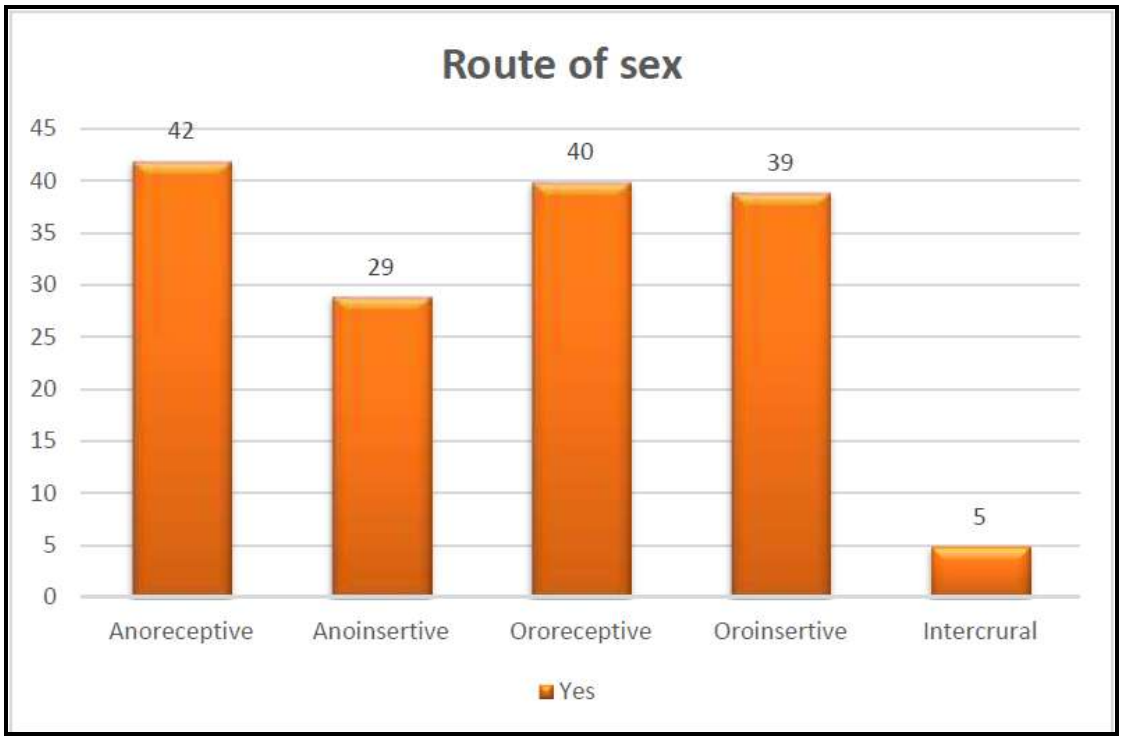
Status of partner	Number
Unknown	53
Known	47
Total	100

Out of 100, 65 patients gave history of condom usage in the last contact. Among these 65 patients 48 of them had used it for anal sex. (TABLE-7)

Condom usage during last contact	Number
Yes	65
No	35
Total	100

Nearly half of the patients (47%) acknowledged to having being paid for recent sex.

Figure(11) shows pattern of sexual intercourse: the highest number of patients were anoreceptive (42%) .

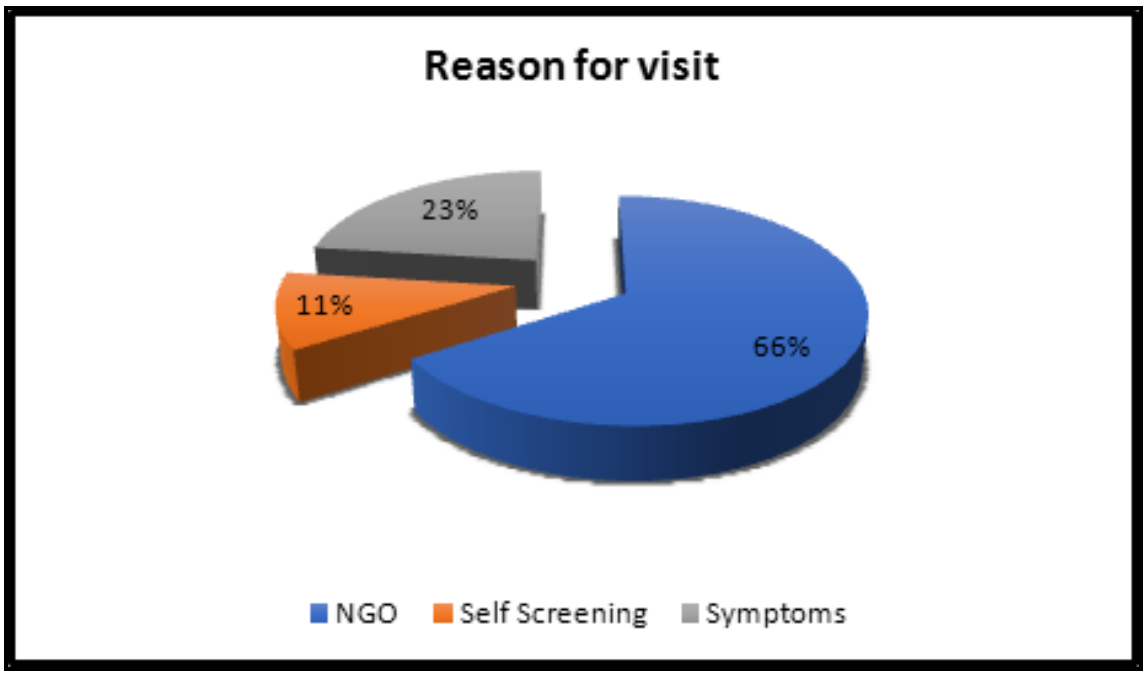


Of total, 13 had undergone reconstructive surgery (total amputation of penis and scrotum with urethral meatus reconstruction) of the external genitalia. (TABLE-8)

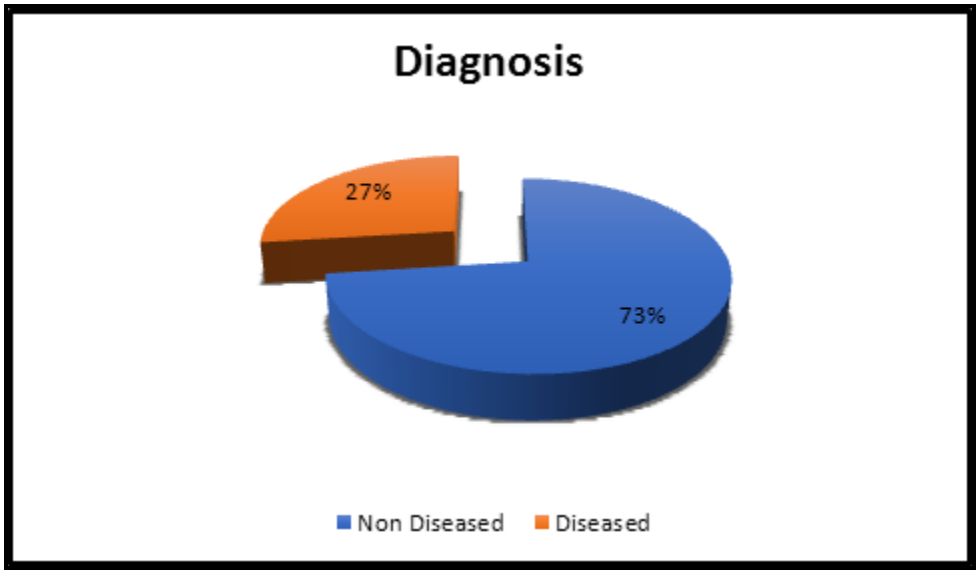
Reconstructive surgery	Number
Yes	13
No	87
Total	100

PREVALENCE OF STIS

Out of 100 patients (MSMs) who attended the opd, 23 cases came with symptoms, 11 cases for self screening and 66 cases were bought by various Non Governmental Organisations(NGOs) (SAHODARAN-1 & 2, SWAM{social welfare association for men}, ICWO{indian community welfare organization}, ARM,TRA{Transgender Association}). (FIG-12)



After evaluation 27 patients were newly diagnosed with sexually transmitted infections.(FIG-13)



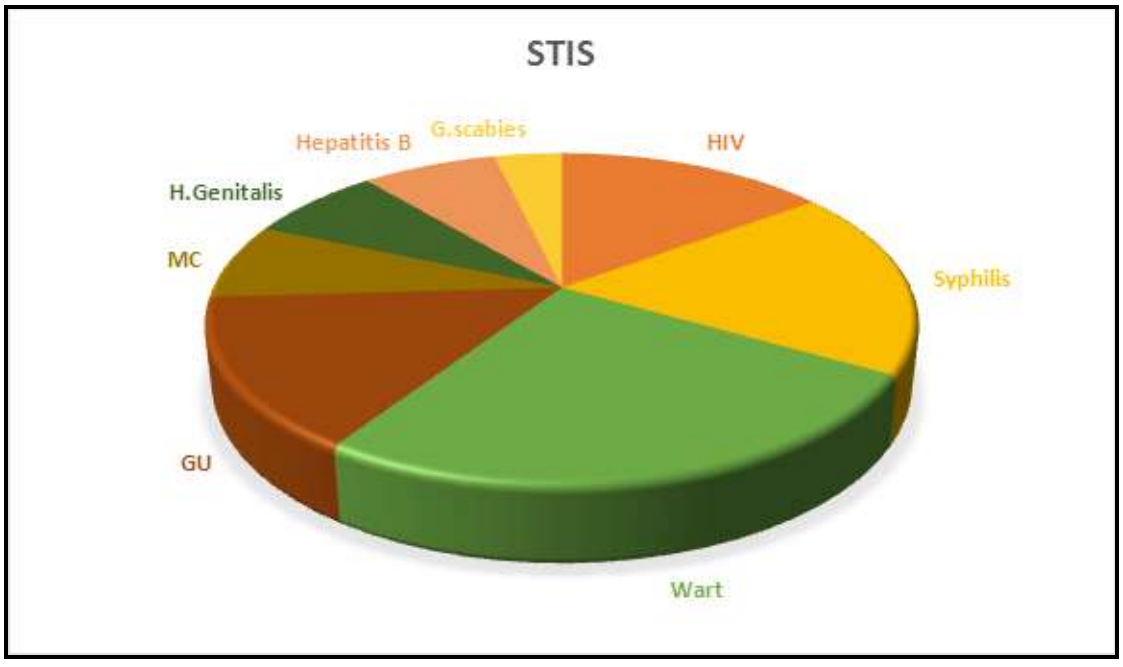
Out of rest 73 patients, 7 cases were old case of sexually transmitted infection and 7 had non venereal dermatoses. Out of 100, 59 were non diseased.

Out of 66 without any disease and non venereal disease, 62(94%)were given presumptive treatment. (TABLE-9)

Presumptive treatment	**Number (%)**
Yes	62 (94%)
No	4 (6%)
Total	66 (100%)

Among 27 newly diagnosed STIs , following is the pattern of STIs: (TABLE-10), (FIG-14)

STIs	Number (%)
HIV 1	4 (14.8)
Syphilis	5 (18.5)
Wart	7 (26)
Gonococcal urethritis	4 (14.8)
MC(molluscum contagiosum)	2 (7.4)
Herpes genitalis	2 (7.4)
Hepatitis B	2 (7.4)
Genital scabies	1 (3.7)
Total	27 (100)



ASSOCIATION BETWEEN SELECTED SOCIO-DEMOGRAPHIC FACTORS AND RISK BEHAVIOR:

In our study the prevalence of STIs are more common in the age group of 20-30 years.(TABLE11)

Age group	STIs {Number (%)}
<20 years	3 (11.1)
20-30 years	19 (70.4)
>30 years	5(18.5)

P value is 0.03, which shows significance between 20-30 years of age and prevalence of STIs.

The prevalence of STIs are more common in the patients who have completed secondary and higher secondary education and least in patients who have completed degree.(TABLE-12)

Education	STIs {Number (%)}
<8th std	7(25.9)
8th – 12th std	17(63.0)
>12th std/degree	3(11.1)

The prevalence of STIs are more common in individual indulged in selling sex (male sex worker {MSWs}) than with other occupations.(TABLE-13)

Occupation	STIs {Number (%)}
House keeping	2 (7.4)
Coolie	9(33.3)
MSWs	11(40.7)
Others	5(18.5)

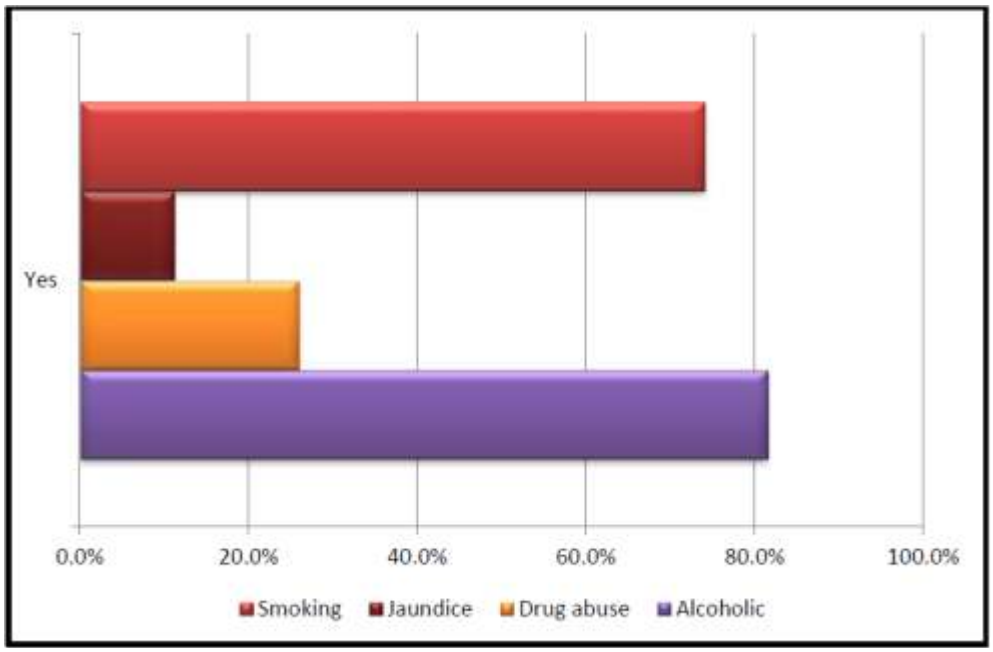
P value is 0.056, which shows no significance between MSWs and prevalence of STIs among them in our study. This is consistent with other studies because of low sample size.

The prevalence of STIs are more common in unmarried individuals than in married individuals. (TABLE-14)

Marital status	STIs {Number (%)}
Unmarried	21(77.8)
Married	6(22.2)

The prevalence of STIs associated with following risk factors: (TABLE-15), (FIG-15)

Risk factors	STIs {Number }
Smoking	20
Alcohol	22
I.V.Drug abuse	7
Jaundice	3



STIs are more common in alcoholics followed by smokers.

P value for alcohol and prevalence of STIs is **0.04**, which shows significance between alcohol intake and prevalence of STIs which proves that alcohol is a major risk factors. Other risk factors showed no significance with p value > 0.05.

The prevalence of STIs are more common in patients who had recent sexual exposure within 1month. The most common being genital/perianal wart followed by gonococcal urethritis. (TABLE-16)

Recent exposure	**STIs {Number (%)}**
< 1month	17
1-6 months	7
6months-2years	3
>2years	0

The prevalence of STIs are more common in individuals who had initial sexual exposure at the age group of 16-20 years.(TABLE-17)

Initial exposure (age)	STIs {Number (%)}
<16 years	0
16-20years	14 (51.9)
21-25 years	12 (44.4)
26-30 years	1(3.7)
>30years	0

P value is 0.424 showing no significance between early sexual exposure and increased prevalence of STIs in our study. This is in consistent with other studies because of low sample size.

The prevalence of STIs is more common among patients who had exposure with unknown partner than among known partner , STIs were also common among those who had irregular partners.(TABLE-18)

Partner status	STIs {Number (%)}
Unknown	21 (77.8)
Known	6 (22.2)

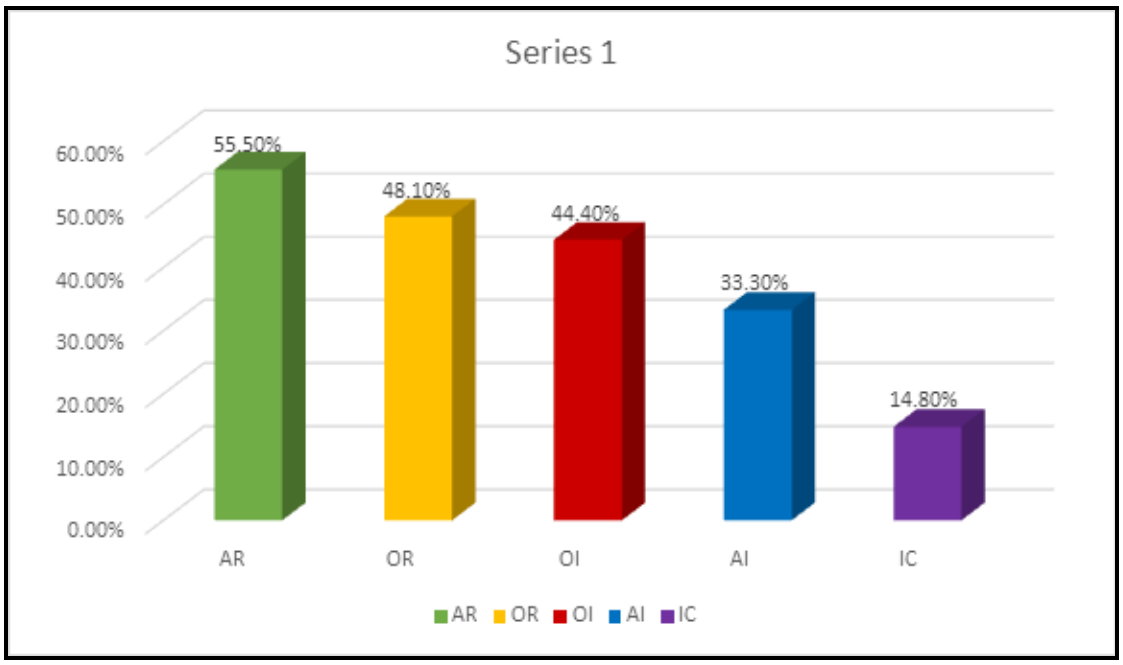
P value is 0.008, which shows significance between sexual contact with unknown partner and prevalence of STIs.

The prevalence of STIs are more common in the patients who did not use condom during their recent exposure and who gave history of irregular usage of condom. Among them condom had been used most commonly during ano and oro insertive route.(TABLE-19)

Condom usage	**STIs {Number (%)}**
Yes	7(25.9)
No	20 (74.1)

The prevalence of STIs are more common in anoreceptive individuals followed by ororeceptive, oroinsertive, anoinsertive and intracrural. (TABLE-20), (FIG-16)

Route of sex	**STIs {Number (%)}**
Ano-receptive	15 (55.5)
Oro-receptive	13 (48.1)
Oro-insertive	12 (44.4)
Ano-insertive	9 (33.3)
Intra-crural	4 (14.8)



P value for all routes is > 0.05 showing no significance between route of sex and prevalence of STIs.

DISCUSSION

In our study most common age group found between 20 - 30 years(64%). It is consistent with study done by Arpit C. Prajapati et al[59] where the most common age group was between 25-35 years. As in this age group , young MSM increasingly engage in high risk sexual behavior like unprotected anal sex, lack of awareness of STIs, multiple sex partners and they use the internet to recruit sex partners which leads on to increased transmission of STIs[60]. CDC(Centre for Disease Control and prevention) estimated that each year 19 million new infections occur, almost half of them belong to age group of 15 to 24[61]. This is because of increase in screening efforts, case reporting and usage of more sensitive diagnostic tests, but it also reflects an actual increase in STIs.

In our study, more than half (63%) of all MSMs had completed secondary and higher secondary education. Harshal R. Salve et al[62] have reported to have highest number of MSMs completed matriculation and higher studies. In Chennai Saravanamurthy, et al. reported 59% had basic education (6th-12th grade(59%)[63].

In our study 9% of MSMs are illiterate unlike Arpit C. Prajapati et al[59] where illiteracy rate among study population was (19.3%). In our study, the prevalence of STIs are more among population who have

completed secondary and higher secondary education (63%) and in illiterate it is (14.8%).

In our study, 13% of the MSMs noted that sex work was their main source of income (MSWs), the rest were mostly either in housekeeping (50%) which also included students (9%), coolie/self-employed (14%) or worked as others (clerks/salesmen /driver/painter/ carpenter) (14%) which is corroborating with studies. In Arpit C. Prajapati et al[59] study 7.2% of the MSMs noted to be male sex worker (MSWs). The prevalence of STIs are more common in individual indulged in selling sex (male sex worker {MSWs}) than with other occupations. Thus a significant proportion of MSWs are depended on sex work as a source of income.

In our study, 47% were paid for sex and the prevalence of STIs were more common among MSMs who were paid for sex. In another study, 35.9% had ever paid another man for sex[69]

In our study 70% were unmarried and 30% were married. In similar type of study by Raja ram S, et al. reported 58.4% MSMs were unmarried, and 39.9% were married[64]. In Arpit C. Prajapati et al[59] half of the MSM were married. In our study, The prevalence of STIs are more common in unmarried individuals and out of the total MSM patients, 11patients (11%) were homosexuals, whereas 89 (89%) were bisexuals. This married MSM serve as the bridge population in the

transmission of different sexually transmitted diseases including HIV epidemic[59]. Among the unmarried MSM, 40% of MSM wanted to marry with male gender and 6% of MSM did not want to marry at all. Almost 36.9% of married MSMs had disclosed their sexual behavior to their wives.

Corroborating with other studies , double-decker (49%) was the commonest sub-typology of MSM, followed by Kothis, TGs and Panthis (32%,13%,6%) respectively in our study. Supporting with other studies, the proportion of Panthis in our study is low. This could be because of hidden nature of this sub-typology. And also, these being the insertive partner, mostly they identify themselves as heterosexuals[65]. In an another study, 51.4% were double decker, 38.4% were kothis , 7.8% of TGs, and 1.4% were panthis[62].

In our study 77(77%) patients were alcoholic, 69(69%) were smokers, 12(12%) had history of intravenous drug abuse. The prevalence of STIs are seen in alcoholics is (81.5%). Having Alcohol has been identified as important determinant of HIV-related risk behaviors in MSMs both nationally[66] and internationally[67,68]. In study done by Harshal R. Salve et al[62] 48% were alcoholics but regular use of alcohol was seen in 45.2%. In a study from Chennai estimated 28% of MSM using alcohol every week to the point of intoxication, tobacco use

weekly[69]. The alcohol consumption impairs judgment during sexual intercourse and decreases the likelihood of condom usage[70].

The initiation of sexual act is most common in the age group of 16-20 yrs (55%), followed by 21-25 yrs (32%). 4 patients had their first exposure at the < 16 yrs of age. Out of four , three had a history of child abuse. Early sexual introduction of the MSMs is an indicator of engaging with multiple sex partners and their vulnerability to STIs. Earlier the exposure, more the duration of sex strongly associated with HIV and other STIs in other studies which is not found in our study . In another study the first sexual act was found more common in age group of 10-19 years (68%).The youngest age of first sex in MSMs was found to be 7-8 years in 4 MSM as they were sexually abused[59]. Miche Rodolph, et al. reported the similar findings, where majority of MSMs had their first sexual act between the age of 16-18 in Cambodia[71]. In our study, the prevalence of STIs are more common in individuals who had initial sexual exposure at the age group of 16-20 years.

With regards to the type of first sexual experience, (50.7%) of the MSMs reported anal sex as their first sexual act, with 37% and 8.3% reporting vaginally and masturbation or oral, respectively.

Regarding status of partner, 53 patients had recent exposure with unknown partners and 47 had with known partners. The prevalence of

STIs is more common among patients who had exposure with unknown partner than among known partner.

In our study, of total, 64% had history of recent exposure within 1 month duration , 23% patients had within past 1-6 months of duration. The prevalence of STIs are more common in patients who had recent sexual exposure within 1month. The most common being genital/perianal wart followed by gonococcal urethritis.

In our study,65% patients gave history of condom usage at last sexual act. Condom use at last sex was relatively high for receptive anal sex (73.8%). In another study, condom use at last sexual act was relatively higher for anal receptive sex (89%) with male partner but it decreases for anal insertive sex with male and female to 79% and 39% respectively[72] which is corroborating with our study. In study done by Prabahar P et al[73], only 7.16% gave the history of condom usage. In a study done in Chennai, 22% had unprotected anal sex[69].

In our study, the prevalence of STIs are more common in the patients who did not use condom during their recent exposure and who gave history of irregular usage of condom. Among used patients condom has been used most commonly during ano and oro insertive route. In one study , the assessment finding showed the improved accessibility of the condoms leads on to reduced risk behaviours with male sexual partners. There was decline in the prevalence of syphilis due to condom usage[74].

The pattern of sex in our study is, the highest number of patients were anorecetive (42%) followed by ororeceptive (40%) followed by oroinsertive (39%) followed by anoinsertive (29%) and least were indulged in intracrural (5%) which is supporting with other study done by Arpit C. Prajapati et al[1] where 43.2% were involved in anoreceptive sex, 24.4% in anoinsertive and half of population in oral sex. The prevalence of STIs are more common in anoreceptive (55.5%) individuals. Anal intercourse specially receptive sexual partner is at higher risk of contracting an STI from their penetrating partners. Half of the MSM were involved in oral sex also[59].

PREVALENCE OF STIS

Out of 100 patients (MSMs) who attended the opd, 23 cases came with symptoms, 11 cases for self screening and 66 cases were bought by NGOs. After evaluation 27 (27%) patients were newly diagnosed with sexually transmitted infections like HIV, Syphilis, Herpes genitalis, Gonococcal-urethritis, Genital and perianal wart, Molluscum contagiosum, Balanoposthitis and Genital scabies.

Among 27 newly diagnosed STIs , 4 (14.8%) cases were found to have HIV (all are positive for HIV-1),5 (18.5%) cases of syphilis (2 cases with early syphilis and 3 cases with late syphilis),7 (26%) cases of genital and perianal wart, 4 (14.8%) cases of gonococcal urethritis, 2 (7.4%) cases of molluscum contagiosum (MC), 2 (7.4%) cases of herpes

genitalia, 2 (7.4%) cases hepatitis B and 1 (3.7%) case of genital scabies. In study done by Prabahar P et al[73], the prevalence of STIs found to be 13.25%.

The prevalence of STIs are common among double decker. The total prevalence of STIs among 13 transgenders was 30.7% i.e 4 cases (1 case (7.6%) had early syphilis, 1 case (7.6%) had perianal wart and other 2 cases (15.3%) were diagnosed with HIV-1). In study done by Subhash Dasarathan[74] , the total prevalence of STIs among TGs was found to be 48.8%. TGs were found to have increased prevalence of STIs is due to poor health seeking behavior. This is due to misconception about STIs and fear of discrimination by health care person and stigma in the society and health care settings.

In our study , wart was more common which is followed by syphilis, HIV, gonococcal urethritis, herpes genitalis, molluscum contagiosum, hepatitis B and genital scabies unlike study done by Taru Garg[76] where syphilis was the most common followed by wart, herpes genitalis, and gonococcal urethritis. In our study 2(7.4%) of 27 had mixed infection at the time of presentation. One had early syphilis and one had genital wart in previously diagnosed HIV patients respectively. In Taru Garg[76] study ,(11%) had mixed infection.

Out of rest 73 patients in our study, 7 cases were old case of sexually transmitted infection and 7 had non venereal dermatoses that

contains balanoposthitis, pearly penile papules,. Out of 100, 59 were non diseased.

SYPHILIS

Total number of MSMs positive for Syphilis during routine RPR testing were 5 (18.5%) (SPAN) which was then confirmed with T. pallidum hemagglutination assay (TPHA) . Of the 5 positive MSM patients, 2(40%) were diagnosed to have early syphilis and 3 (60%) were diagnosed to have late latent syphilis. In patients with early syphilis one dose inj. Benzathine penicillin 2.4 million units is given and in late syphilis 3 doses of inj. Benzathine penicillin 2.4 million units is given and advised for follow up. There was decline in 4 fold dilution among 3 patients at 3 months. Patients were asked to bring partner. In another study, prevalence of syphilis among MSMs was found to be (4.5%) out of which 47.3% diagnosed to have early syphilis and 52.7% were diagnosed to have late syphilis[73]. In study done by Prakash Narayanan[72], the prevalence of syphilis among MSMs was 6.6% which lesser when compared to our study.

In our study, 1 case of early syphilis is seen in the already diagnosed HIV patient. In a study done in Mumbai showed that HIV positives are 2.4 times more at risk of getting syphilis during their life time[77]. In our study, 1(7.6%) case of early syphilis was seen in transgender (TGs). In a study done by Subhash Dasarathan[75], in 20.7%

of TGs were affected by syphilis and it was the most common STI among other STIs which is not in concordance with our study. This may be due to low number of TGs included in the study.

HIV

HIV infection among men who have sex with men (MSM) has been increasing in recent years around the world, particularly in Asia[78].The prevalence of newly diagnosed HIV is 14.8% during the routine investigation which was confirmed with 2nd and 3rd HIV kit (HIV1+2 immunodot test kit , ½ trispot kit ,SD BIOLINE). Patients were referred to ART center for further management and asked to bring partner for check up. In other studies the prevalence of HIV among MSMs were 4%[76], 17%[79] ,19.2%[73] 35.6%[72]. In study done Setai et al, the prevalence was 16.5% which is in consistent with our study. NACO reported prevalence of HIV among MSM in Chennai is 6.8% and in Mumbai is 9.6%[79].

In our study 3 out 4 cases of HIV had unprotected anoreceptive sex. Unprotected anoreceptive intercourse has been described as an independent risk factor for HIV infection among MSM[60,80]. One recent study estimated the risk of HIV infection in anoreceptive intercourse per act with a HIV positive partner is 0.82% and with a unknown serostatus partner is 0.27%[36].

Transgenders are 49 times more at risk of living with HIV/AIDS compared to general population. In present study, 2 out of 4 i.e 50%

prevalence was seen in TGs. In another study on TGs the prevalence was 13.4%[75], 18.1%[81] ,68%[79].

In our study one case of HIV positive patients give history of I.V drug abuse. I.V drug abuse is the main risk factor for HIV in north-east India. In 2006, NACO reported 2.4-19.8% of HIV infection among I.V drug users in north-eastern states, 16.8% in Chennai ,10% in New Delhi, 20.4% in Mumbai[82].

HPV

Human papillomavirus (HPV) infection among MSM is the primarly a risk factor for anal cancer and the rate is much higher than the general population,and trends suggesting increasing rates, particularly among HIV-infected MSM.

In our study the prevalence is 26%. It is the most common STI noticed in MSM in our study. 2 (28.5%) out 7, had penile wart, 3 (42.8%) had perianal wart and 2 (28.5%) had both penile and perianal wart which were treated with podophyllin toxin and cryotherapy . In another study, the prevalence was 26% and out of total, 50% had penile warts, 37.5% had perianal warts and 12.5%had both penile and perianal warts . All patients with perianal warts gave history of being passive partners, and thereby indulging into unprotected anoreceptive intercourse[76] similar to present study.

HPV infection among MSM is highest in those who are coinfected with HIV[83]. In present study, one case of genital wart was diagnosed in previously diagnosed HIV patient. In our study, the prevalence of wart among TGs is 7.6% (1 case of perianal wart). In another study the prevalence was 2.43%[75].

HSV

It is one of the most prevalent sexually transmitted infection globally including India. In our study 2 (7.4%) cases of herpes genitalis were found, both cases came with primary episode which were treated with red kit (kit5) and asked to bring partner for screening .11 cases were positive for HSV 2 and 15 cases were positive for HSV 1. In a study done in Mumbai in 2003, 26% of MSWs were found to be HSV-2 seropositive[77] which is not correlating with our study. In a study done 2001 in Mumbai, 40% of MSM were positive for HSV 2 IgG[79]. In another study 1% (12 cases) had herper genitalis of which 7 patients had primary episode and 5 had recurrent episode[73].

In present study. Out of 2 ,1 (3.7%) was seen in transgender. 1 (3.7%) presented with herpes genitalis . In other studies 71% of transgenders were found to be positive for HSV 2 IgG[79]. In other studies the prevalence of HSV-2 in TGs is 45.4%[81], 29%[77].

Increase in the HSV-2 prevalence highlights about large number of undiagnosed patients and the presence of asymptomatic shedding.

URETHRITIS

In our study, out of the 4 MSM patients who had urethritis, all 4 (14.8%) were due to gonococcal infection. Gonococcal urethritis was diagnosed by Gram stain and culture and treated with grey kit (kit1) and epidose was given for partners. There was no evidence of rectal involvement in our study. In one study the prevalence among MSMs was 13.8%[59] which is in consistent with our study. In present study it was seen more common in patients who had sexual exposure within a week with unknown partner , , no case of non-gonoccal urethritis or rectal discharge were seen.

HEPATITIS B AND C

Infections caused by hepatitis B virus (HBV) and hepatitis C virus (HCV) show an increasing trend among high risk groups. In our study, the prevalence was 7.4% (2 cases), out of which one case was positive for only HBsAg and another case was positive for both HBsAg and anti HCV.

Prevalence among MSMs is - 4.4% and 3.3% for HBV and HCV respectively[84]. In other studies, it was 8%[63] and 21%[79] for HBV. HBsAg prevalence of 90% among MSM and 20% among transgenders was reported from Mumbai in 2001[79].

One cases with both HBsAg and HCV positive is seen in I.V.Drug abuse. Hepatitis C infection is very high among IDUs, the highest being reported from the North Eastern states of the country[85].

This suggests that the contaminated injections are the predominant mode of transmission of hepatitis C, unlike hepatitis B, where sexual transmission also plays an important role. In spite of the availability of vaccines, prevalence of HBsAg remains higher in India, because hepatitis B vaccination is not a part of our national immunization schedule. In our study 9 cases were vaccinated with HBsAg vaccination.

MOLLUSCUM CONTAGIOSUM

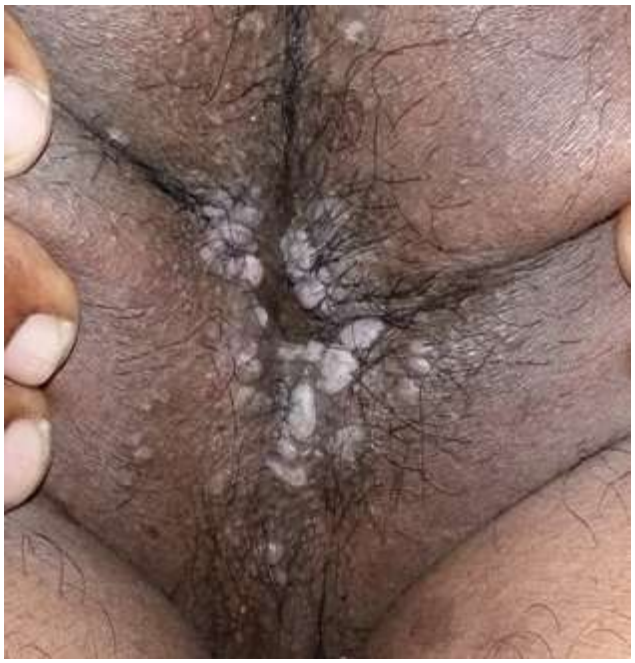
The prevalence of genital MC (molluscum contagiosum) has also increased. In present study 7.4 % (1case) were positive for MC. He was treated by doing needling and removal of the molluscum bodies from the lesion. There is significant rise from 1% to 9.8% from 1970 to 2000 in a study done in North India86. In Andhra Pradesh, the genital MC cases showed a 2-fold rise from 0.22% to 0.31%[87] from 2000 to 2005.

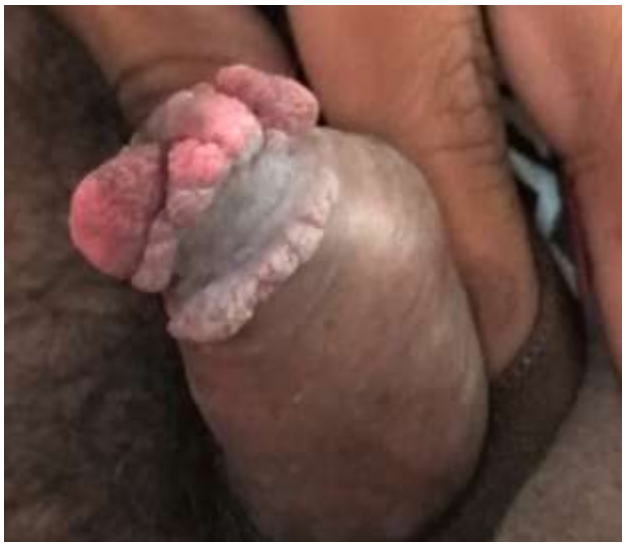
GENITAL SCABIES

In our study the prevalence was 7.4% (1 case) who presented with the multiple itchy papules over penis and scrotum and treated with 1% GBHC(gamma benzene hexachloride), overnight application and wash in the morning and asked to bring the partner for treatment. In a study 7(0.57%)[73] and 4.4%[76] had genital scabies. The incidence is higher in MSMs than general population[73.] This may be due unhygienic practices among MSMs and poor health seeking behavior.

CLINICAL PICTURES

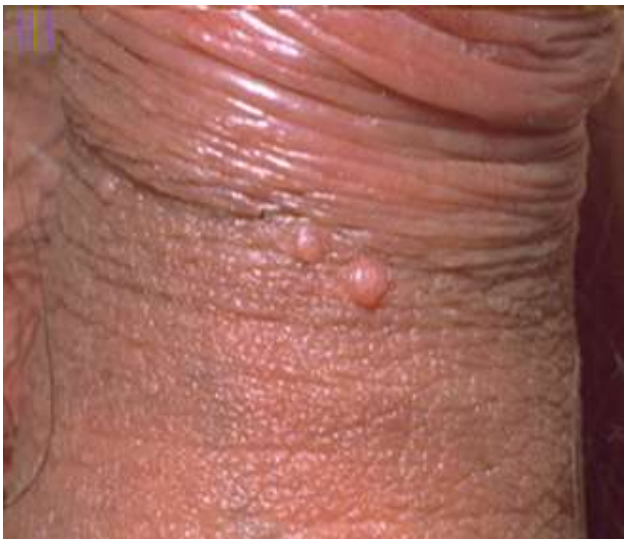
PERIANAL & PENILE WARTS





CHANCRE

GENITAL MOLLUSCUM CONTAGIOSUM



CONCLUSION

- MSM are the “bridging population for spread of STIs and HIV
- The prevalence of STIs in MSM is seen in 2nd decade of age.
- Higher secondary educated MSMs are more prone for acquiring STIs.
- Increased prevalence is seen in unmarried MSMs with unknown partners.
- Age of onset of sexual intercourse is earlier among MSMs.
- Most common route of sexual intercourse among MSMs found was anoreceptive > ororeceptive.
- Highest prevalence of STIs were seen in MSMs with receptive nature (anoreceptive> ororeceptive).
- Increased prevalence of STIs are seen in MSMs with no condom usage.
- Alcohol is major risk factor among MSMs in acquiring STIs.
- In our study, predominantly wart (genital & perianal) was seen among MSMs.
- Increase in the trend of syphilis among MSMs was noticed.

- Herpes simplex infection is though clinically asymptomatic , but antibodies are seen in disproponately higher in MSMs.
- Sex education is need to be given very earlier in MSM individual as earlier the age of sexual activity.
- Address the stigma among MSMs and increase the health care awareness among them.
- Partner notification treatment needs to be encouraged.
- Hepatitis B vaccination should be promoted.
- Counselling for consistent use of condom should be done intensively to improve condom use special with unknown partners and during oral sex.
- Promoting awareness regarding HIV-AIDS transmission & its prevention may sensitize them to use condom correctly during every sexual act.
- Much more work is needed to determine how to best help MSM minimize sexual risk, address mental health concerns, and engage in healthy lives.
- Regular monitoring of program data and operational research are necessary for further effectiveness of prevention and control of HIV in this HRG.

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PROFORMA

NAME OF THE PATIENT : AGE /SEX:

ADDRESS:

OCCUPATION :

PH.NO.:

SOCIO-ECONOMIC STATUS :

EDUCATION:

MARIATAL STATUS :

COMPLAINTS OF

PAST H/O :

SEXUAL HISTORY:

Recent exposure

Contact history

MSM activity

FAMILY HISTORY:

PERSONAL HISTORY:

EXAMINATION: G/E:

GENITAL EXAMINATION:

DIAGNOSIS:

INVESTIGATIONS:

HIV 1 AND 2

RPR

TPHA

HBsAg

Anti HCV

HSV 1 and 2

CONSENT FORM

Mr :

Age :

Address :

Phone :

Treatment given :

I undersigned Mr

have been explained about the risk of sexually transmitted infections due to MSM activity. I have been explained about the blood tests , being done to investigate the possibility sexually transmitted infections in my regional language. I am also aware that the test is only a diagnostic tests. The possible side effects are explained . I have been explained that this study will be performed by Dr.Ashwini B

I further state that I have carefully read and understood all the information provided in this form and with full conscious mind I hereby give my consent for the said investigation with its risks involved.

Signature of the Patients/Thumb impression:

Witness:

Name: Signature:

Date:

PATIENT INFORMATION MODULE

You are being invited to be a subject in this study.

Before you participate in this study, I am giving following details about this trial, which include the aims, methodology, intervention, possible side effects, if any .

MSMs will be included in this study. A detailed clinical history will be taken following a standardized Performa. A clinical examination and relevant investigation will be done.

The result arising from this study will be analyzed and used for academic purposes. You will be given clear instructions at every step and you are free to ask/clarify any doubts. Your identity remains confidential. You are free to withdraw from the trial at any point of time, without any prior notice &/or without any medical or legal implications.

I request you to volunteer for this study

Thanking You

Investigator's Sign

(Dr.Ashwini B)

Patient's Sign

Name:

URKUND

Urkund Analysis Result

Analysed Document:	PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS AMONG MEN HAVING SEX WITH MEN{MSM} ATTENDING TERTIARY HEALTH CARE CENTRE, NORTH CHENNAI.docx (D31253526)
Submitted:	10/12/2017 2:15:00 PM
Submitted By:	biradarashwini91@gmail.com
Significance:	0 %

Sources included in the report:

Instances where selected sources appear:

0

INSTITUTIONAL ETHICAL COMMITTEE, STANLEY MEDICAL COLLEGE, CHENNAI-1

Title of the Work : Prevalence of Sexually Transmitted infection among Men having sex with Men(MSM) attending tertiary health care Centre, North Chennai.

Principal Investigator : Dr. Ashwini.B

Designation : P G MD (DVL)

Department : Department of D V L
Government Stanley Medical College,
Chennai-01

The request for an approval from the Institutional Ethical Committee (IEC) was considered on the IEC meeting held on 26.08.2016 at the Council Hall, Stanley Medical College, Chennai-1 at 2PM

The members of the Committee, the secretary and the Chairman are pleased to approve the proposed work mentioned above, submitted by the principal investigator.

The Principal investigator and their team are directed to adhere to the guidelines given below:

1. You should inform the IEC in case of changes in study procedure, site investigator investigation or guide or any other changes.
2. You should not deviate from the area of the work for which you applied for ethical clearance.
3. You should inform the IEC immediately, in case of any adverse events or serious adverse reaction.
4. You should abide to the rules and regulation of the institution(s).
5. You should complete the work within the specified period and if any extension of time is required, you should apply for permission again and do the work.
6. You should submit the summary of the work to the ethical committee on completion of the work.

MEMBER SECRETARY, 28/9/16.
IEC, SMC, CHENNAI

MEMBER SECRETARY
ETHICAL COMMITTEE,
STANLEY MEDICAL COLLEGE
CHENNAI-600 001.

KEY TO MASTER CHART:

- MS→ marital status
- HS→ house- keeping
- COL→ coolie
- MSW→ male sex worker
- EDU→ educator
- PVD→ previous venereal disease
- PT→ presumptive treatment
- Smo→ smoking
- Alc→ alcohol
- IVD→ intravenous drug abuse
- B.T→ blood transfusion
- Jau→ jaundice
- R.exp→ recent sexual exposure
- Int.Exp→ age at intial exposure
- SOP→ status of partner
- CON→ condom usage
- AR→ anoreceptive
- AI→ anoinsertive
- OR→ ororeceptive
- OI→oroinsertive
- IC→ intercrural
- GE→ genital examintion
- Sod→ soddening
- Chan→ chancre
- RS→ reconstructive surgery
- HU→ herpetic ulcer
- Syp-→ syphilis
- UK→ unknown
- K→ known
- 0 → no
- 1→ yes

MASTER CHART

S.no	Age	edu	occu	M.S	REASON	PVD	P.T	Smo	Alc	IVD	BT	Jau	R.Exp	Int.ex	SOP	CON	PAID	AR	AI	OR	OI	IC	GE	RS	Diagnosis	HIV 1&2	RPR	TPHA	HBsAg	A.HCV
1	20	10th	HS	UM	NGO	NO	YES	YES	YES	NO	NO	NO	10days	16	UK	YES	YES	1	1	1	1	0	n	no	scr	neg	neg	neg	neg	neg
2	43	8th	HS	UM	NGO	NO	YES	YES	YES	NO	NO	NO	11days	16	K	NO	NO	0	1	0	1	0	n	yes	scr	neg	neg	neg	neg	neg
3	36	10th	HS	M	NGO	NO	YES	YES	YES	NO	NO	NO	12days	16	K	NO	NO	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
4	45	9th	HS	UM	itching over genitalia	NO	NO	YES	YES	YES	NO	NO	13days	16	K	YES	NO	1	0	0	0	0	sod	no	BP	neg	neg	neg	neg	neg
5	26	UE	COL	UM	NGO	NO	NO	YES	NO	NO	NO	YES	10days	17	K	NO	NO	1	0	1	0	0	n	yes	scr	neg	neg	neg	neg	neg
6	25	10th	HS	M	NGO	NO	YES	YES	YES	NO	NO	NO	2mths	20	K	YES	no	1	1	0	0	0	h'roids	no	scr	neg	neg	neg	neg	neg
7	27	5th	MSW	M	NGO	HG	YES	NO	NO	NO	NO	NO	10days	17	UK	NO	YES	0	0	1	0	1	erosion	no	old HU	neg	neg	neg	neg	neg
8	28	12th	MSW	UM	NGO	SYP	NO	NO	YES	NO	NO	NO	2yrs	20	UK	YE	yes	1	0	1	0	0	n	no	old syp	neg	1:2dil	neg	neg	neg
9	36	8th	COL	UM	NGO	NO	NO	YES	YES	NO	NO	YES	3yrs	25	UK	NO	no	1	0	1	0	0	n	yes	scr	neg	neg	neg	neg	neg
10	22	12th	HS	UM	NGO	NO	NO	YES	YES	NO	NO	NO	1day	19	UK	YES	no	0	1	1	1	0	n	no	scr	neg	neg	neg	neg	neg
11	25	10th	COL	M	NGO	NO	YES	NO	YES	NO	NO	NO	15days	18	K	YES	YES	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
12	20	10th	COL	UM	NGO	NO	YES	YES	NO	NO	NO	NO	1day	17	UK	YES	NO	1	0	1	0	1	n	no	scr	neg	neg	neg	neg	neg
13	29	BEd	MSW	UM	self screening	NO	YES	YES	NO	NO	YES	NO	3days	20	UK	NO	YES	0	0	1	0	0	n	yes	scr	neg	neg	neg	neg	neg
14	37	12th	HS	M	NGO	LLS	YES	NO	YES	NO	NO	NO	1week	17	UK	YES	YES	1	0	1	0	0	n	no	old HIV/LLS	pos	neg	neg	neg	neg
15	25	8th	HS	M	NGO	NO	NO	YES	YES	NO	NO	NO	6mths	14	K	YES	NO	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
16	27	10th	MSW	UM	NGO	NO	NO	YES	YES	YES	NO	NO	18mths	20	UK	NO	YES	1	0	0	0	0	n	yes	HIV	pos	neg	neg	neg	neg
17	23	5th	COL	M	NGO	NO	NO	YES	YES	NO	NO	YES	10days	15	K	NO	no	1	0	1	1	0	n	no	scr	neg	neg	neg	neg	neg
18	34	10th	HS	M	NGO	NO	NO	YES	NO	NO	NO	NO	3yrs	12	UK	YES	YES	1	0	1	0	1	n	no	scr	neg	neg	neg	neg	neg
19	26	10th	HS	UM	NGO	NO	NO	YES	YES	NO	NO	NO	18mths	20	K	YES	no	1	0	0	0	0	n	yes	scr	neg	neg	neg	neg	neg
20	28	8th	COL	M	NGO	NO	YES	YES	YES	NO	NO	NO	1day	20	UK	NO	YES	0	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
21	35	6th	MSW	UM	NGO	NO	NO	YES	YES	NO	NO	NO	1wk	18	UK	YES	yes	1	0	0	0	0	n	no	HIV	pos (1)	neg	neg	neg	neg
22	24	dip	MSW	UM	NGO	NO	YES	YES	YES	NO	NO	NO	1day	20	UK	YES	yes	0	0	1	1	0	n	no	scr	neg	neg	neg	neg	neg
23	31	10th	COL	M	genital ulcer	NO	NO	YES	YES	NO	NO	NO	1wk	20	K	NO	NO	1	0	1	0	0	chan	no	syp (plha)	pos	1:8 dil	pos	neg	neg
24	42	3rd	COL	UM	NGO	NO	YES	NO	NO	NO	NO	NO	2wks	18	K	YES	NO	1	0	1	1	0	n	no	scr	neg	neg	neg	neg	neg
25	22	3rd	COL	M	NGO	NO	YES	YES	YES	NO	NO	NO	3wk	20	K	YES	YES	0	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
26	26	8th	EDU	M	self screening	NO	YES	YES	YES	NO	NO	NO	6wks	22	UK	NO	YES	0	0	0	1	0	n	no	scr	neg	neg	neg	neg	neg
27	38	8th	MSW	M	NGO	NO	YES	YES	YES	NO	NO	NO	8yr	18	UK	NO	YES	0	0	0	1	0	n	no	scr	neg	neg	neg	neg	neg
28	37	8th	COL	UM	self screening	NO	YES	YES	YES	NO	NO	NO	1mth	17	K	YES	no	0	0	1	1	0	n	no	scr	neg	neg	neg	neg	neg
29	21	12th	MSW	M	NGO	NO	YES	YES	YES	NO	NO	NO	1week	16	UK	NO	YES	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg

30	22	8th	MSW	UM	SELF SCREENING	NO	YES	NO	NO	NO	NO	NO	1dco	20	K	YES	YES	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
31	34	8th	MSW	M	growth over genitalia	NO	NO	YES	NO	NO	NO	NO	6days	22	K	NO	YES	0	0	0	0	0	grw	no	wart (plha)	neg	neg	neg	neg	neg
32	22	dip	EDU	UM	self screening	NO	YES	NO	YES	NO	NO	NO	1day	18	K	YES	no	0	0	1	1	0	n	yes	scr	neg	neg	neg	neg	neg
33	40	5th	OTHERS	M	burning micturitation	NO	YES	NO	NO	NO	NO	NO	2mths	20	UK	YES	YES	1	0	0	0	1	n	no	uti	neg	neg	neg	neg	neg
34	22	dip	HS	UM	NGO	PAW	NO	NO	NO	NO	NO	NO	6weeks	18	K	NO	no	1	0	1	0	0	n	yes	scr	neg	neg	neg	neg	neg
35	19	10th	COL	UM	NGO	NO	NO	YES	NO	NO	NO	NO	1day	17	K	YES	no	0	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
36	20	10th	MSW	M	NGO	NO	YES	NO	NO	NO	NO	YES	2day	17	UK	NO	YES	0	0	0	1	0	n	no	scr	neg	neg	neg	neg	neg
37	27	8th	HS	M	NGO	NO	YES	YES	YES	NO	NO	NO	1wk	20	K	YES	NO	1	1	1	1	0	n	no	scr	neg	neg	neg	neg	neg
38	46	B.ed	EDU	M	NGO	NO	YES	YES	NO	NO	NO	NO	9yrs	25	K	YES	YES	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
39	35	4th	MSW	UM	NGO	NO	NO	NO	YES	NO	NO	NO	3yr	28	UK	YES	YES	0	1	0	1	1	n	no	scr	neg	neg	neg	neg	neg
40	44	12th	COL	UM	itching over genitalia	NO	YES	NO	YES	NO	NO	NO	1day	17	UK	NO	no	0	0	1	0	0	sod	no	BP	neg	neg	neg	neg	neg
41	20	4th	COL	M	NGO	NO	YES	NO	YES	YES	NO	NO	3days	15	K	YES	NO	1	0	1	0	0	n	no	PLHA	pos (1)	neg	neg	neg	neg
42	23	B.cm	MSW	UM	NGO	NO	NO	YES	YES	NO	NO	NO	1month	24	UK	YES	YES	0	0	1	0	1	P&S	no	syp	neg	1: 4 dil	pos	neg	neg
43	24	UE	MSW	UM	urethral discharge	NO	NO	YES	NO	YES	NO	NO	1week	24	UK	NO	yes	0	1	1	0	0	n	no	Go.Ur	neg	neg	neg	neg	neg
44	33	UE	COL	UM	NGO	NO	YES	NO	YES	NO	NO	NO	1day	22	UK	YES	NO	1	0	0	0	0	n	yes	scr	neg	neg	neg	neg	neg
45	21	12th	OTHERS	UM	self screening	NO	YES	NO	NO	NO	YES	NO	2yrs	20	UK	YES	no	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
46	39	10th	COL	M	NGO	NO	YES	NO	NO	NO	NO	NO	1wk	18	UK	NO	NO	0	0	0	0	1	n	no	scr	neg	neg	neg	neg	neg
47	22	10th	EDU	M	urethral discharge	NO	NO	YES	YES	NO	NO	NO	1wk	19	UK	NO	NO	1	0	1	1	0	MPUD	no	Go.Ur	neg	neg	neg	neg	neg
48	40	8th	COL	M	NGO	NO	YES	YES	YES	NO	NO	NO	4months	20	K	YES	NO	0	1	1	1	0	n	no	scr	neg	neg	neg	neg	neg
49	34	6th	OTHERS	M	NGO	NO	YES	YES	YES	NO	NO	NO	3days	20	UK	YES	no	1	1	1	1	0	n	no	scr	neg	neg	neg	neg	neg
50	34	10th	MSW	M	NGO	NO	YES	YES	YES	YES	NO	NO	2weeks	22	K	NO	no	0	1	0	0	0	n	no	scr	neg	neg	neg	neg	neg
51	21	4th	COL	M	papules over genitalia	NO	NO	NO	YES	YES	NO	NO	3weeks	19	K	YES	NO	0	1	0	0	0	pap	no	MC	neg	neg	neg	neg	neg
52	32	10th	OTHERS	M	NGO	NO	YES	YES	YES	NO	NO	NO	20days	23	UK	YES	YES	0	0	1	1	1	n	no	scr	neg	neg	neg	neg	neg
53	25	9th	OTHERS	UM	NGO	NO	YES	NO	YES	NO	NO	NO	20days	20	UK	NO	YES	0	0	1	1	0	n	no	scr	neg	neg	neg	neg	neg
54	30	8th	OTHERS	M	NGO	NO	YES	NO	YES	YES	NO	NO	10days	30	UK	YES	no	0	0	0	1	0	n	no	scr	neg	neg	neg	neg	neg
55	25	12th	COL	M	NGO	NO	NO	YES	YES	NO	NO	NO	4months	23	UK	NO	no	1	0	0	0	0	n	yes	syp	neg	1: 64dil	pos	neg	neg
56	24	8th	MSW	UM	perianal growth	NO	NO	NO	YES	NO	NO	NO	1wk	20	K	NO	YES	0	1	0	1	0	grw	yes	PAW	neg	neg	neg	neg	neg
57	36	10th	COOLIE	UM	itching over genitalia	NO	NO	YES	YES	NO	NO	NO	1week	35	K	YES	NO	0	1	1	1	0	pap	no	scabies	neg	neg	neg	neg	neg
58	28	B.cm	OTHERS	UM	NGO	NO	YES	YES	YES	NO	NO	NO	1year	25	K	NO	NO	0	0	1	1	0	n	no	scr	neg	neg	neg	neg	neg
59	22	12th	OTHERS	UM	genitalia growth	NO	NO	YES	YES	NO	NO	NO	3weeks	20	UK	NO	NO	0	1	0	0	0	grw	no	wart	neg	neg	neg	neg	neg
60	37	10th	COL	UM	papules over genitalia	NO	NO	YES	YES	NO	NO	YES	5mths	24	K	YES	NO	0	1	1	1	1	pap	no	ppp	neg	neg	neg	neg	neg
61	36	B.cm	EDU	UM	papules over genitalia	NO	NO	YES	YES	NO	NO	NO	1week	21	K	YES	YES	1	0	0	0	0	pap	no	ppp	neg	neg	neg	neg	neg
62	29	10th	COL	M	genital ulcer	NO	NO	YES	YES	YES	NO	NO	2mnths	22	UK	NO	NO	1	0	1	0	0	chan	no	syp	neg	1: 256	pos	neg	neg
63	29	5th	MSW	UM	NGO	NO	NO	YES	YES	NO	NO	NO	1month	20	UK	YES	YES	0	1	1	0	1	n	no	scr	neg	neg	neg	neg	neg
64	22	B.cm	COL	UM	NGO	NO	YES	YES	YES	YES	NO	NO	1day	18	K	NO	YES	1	0	1	0	0	n	yes	scr	neg	neg	neg	neg	neg
65	27	10th	MSW	UM	NGO	NO	YES	YES	YES	NO	NO	NO	10days	20	K	NO	NO	1	0	0	0	0	n	no	scr	neg	neg	neg	neg	neg

66	28	10th	OTHERS	UM	NGO	NO	NO	YES	YES	YES	NO	YES	2weeks	21	UK	NO	YES	1	1	1	0	0	n	no	hep B	neg	neg	neg	pos	neg
67	34	5th	HS	UM	NGO	NO	YES	YES	YES	NO	NO	NO	20days	32	K	YES	NO	0	0	0	1	1	n	no	scr	neg	neg	neg	neg	neg
68	23	8th	MSW	UM	genital ulcer	NO	NO	YES	YES	NO	NO	NO	2weeks	18	UK	NO	YES	1	1	0	1	0	G.U	no	HG	neg	neg	neg	neg	neg
69	25	10th	COL	UM	NGO	NO	YES	YES	YES	NO	NO	NO	3months	20	K	NO	NO	0	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
70	24	B.cm	EDU	UM	self screening	NO	YES	YES	YES	NO	NO	NO	2months	22	K	YES	YES	0	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
71	27	10th	COL	UM	NGO	NO	NO	YES	NO	NO	NO	NO	10days	23	UK	NO	NO	1	0	0	0	1	n	yes	HIV	pos (1)	neg	neg	neg	neg
72	33	9th	COL	UM	scaly lesions-palms & s	G.U	NO	YES	YES	NO	NO	NO	1 weeks	25	UK	NO	YES	0	1	1	1	0	scar	no	syp	neg	1:32 dil	pos	neg	neg
73	25	B.Ed	EDU	UM	self screening	NO	NO	NO	YES	NO	NO	yes	3months	22	UK	YES	YES	0	1	1	1	0	n	no	scr	neg	neg	neg	neg	neg
74	43	10th	OTHERS	UM	NGO	NO	YES	YES	NO	NO	NO	NO	3 month	22	K	YES	NO	0	1	0	0	0	pap	no	PPP	neg	neg	neg	neg	neg
75	25	5th	COL	UM	growth over genitalia	NO	NO	NO	YES	NO	NO	YES	2weeks	23	UK	NO	NO	1	0	1	0	0	grw	yes	PAW	neg	neg	neg	neg	neg
76	29	5th	OTHERS	UM	NGO	NO	YES	NO	YES	NO	NO	NO	6months	21	UK	NO	NO	0	0	0	1	1	n	no	scr	neg	neg	neg	neg	neg
77	22	8th	OTHERS	UM	NGO	NO	YES	NO	YES	NO	NO	NO	6months	18	K	YES	NO	0	0	1	0	0	pap	no	ppp	neg	neg	neg	neg	neg
78	27	10th	OTHERS	UM	NGO	NO	YES	NO	YES	NO	NO	NO	20days	25	K	YES	NO	0	0	0	0	0	n	no	scr	neg	neg	neg	neg	neg
79	21	B.cm	MSW	UM	urethral discharge	NO	NO	NO	YES	NO	NO	NO	20days	24	uk	NO	YES	1	1	0	0	1	MPUD	no	Go.Ur	neg	neg	neg	neg	neg
80	19	7th	OTHERS	UM	self screening	NO	YES	YES	YES	YES	YES	YES	1month	18	UK	YES	YES	0	0	0	1	0	n	no	hep B	neg	neg	neg	pos	pos
81	28	B.cm	OTHERS	UM	NGO	NO	YES	YES	YES	NO	NO	NO	2months	21	K	NO	YES	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
82	26	8th	OTHERS	UM	NGO	NO	YES	YES	YES	NO	NO	NO	6months	17	UK	NO	NO	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
83	35	12th	OTHERS	UM	NGO	NO	NO	YES	YES	NO	NO	NO	15days	32	UK	YES	NO	0	1	0	0	0	n	no	PLHA	pos	neg	neg	neg	neg
84	18	5th	HS	UM	perianal growth	NO	NO	YES	NO	NO	NO	NO	3months	17	UK	NO	YES	1	0	1	0	1	grw	no	PAW	neg	neg	neg	neg	neg
85	29	12th	OTHERS	UM	NGO	NO	YES	YES	NO	NO	NO	NO	2day	22	K	YES	NO	0	1	0	1	0	n	no	scr	neg	neg	neg	neg	neg
86	28	8th	COL	UM	NGO	NO	YES	NO	NO	NO	NO	NO	3days	21	UK	YES	NO	1	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
87	34	B.cm	EDU	UM	NGO	NO	YES	YES	YES	NO	NO	NO	2weeks	20	UK	NO	YES	0	1	1	0	1	n	no	scr	neg	neg	neg	neg	neg
88	23	12th	OTHERS	UM	growth over genitalia	NO	NO	NO	YES	NO	NO	NO	4months	20	UK	YES	YES	1	1	0	1	0	grw	no	wart	neg	neg	neg	neg	neg
89	36	BSc	EDU	UM	NGO	NO	YES	YES	YES	NO	NO	NO	2weeks	25	K	YES	NO	0	0	0	0	0	n	yes	scr	neg	neg	neg	neg	neg
90	28	5th	MSW	UM	vesicles over genital	NO	NO	NO	NO	NO	NO	NO	10days	17	UK	NO	YES	0	0	1	1	0	G.U	no	HG	neg	neg	neg	neg	neg
91	27	12th	HS	UM	NGO	LLS	YES	NO	YES	NO	NO	NO	1week	17	UK	YES	YES	1	0	0	0	1	n	no	old lls	neg	1:8 dil	neg	neg	neg
92	22	B.ed	EDU	UM	NGO	NO	YES	YES	NO	NO	NO	NO	9yrs	25	K	YES	YES	0	1	1	1	1	n	yes	scr	neg	neg	neg	neg	neg
93	19	10th	COL	UM	urethral discharge	NO	NO	YES	YES	NO	NO	NO	1wk	18	UK	NO	NO	1	0	0	1	0	MPUD	no	Go.Ur	neg	neg	neg	neg	neg
94	28	12th	MSW	UM	NGO	NO	YES	YES	YES	NO	NO	NO	2years	22	K	YES	NO	0	1	1	0	1	n	no	scr	neg	neg	neg	neg	neg
95	23	12th	MSW	UM	growth over genitalia	NO	NO	NO	YES	NO	NO	NO	2months	20	UK	NO	yes	1	0	1	1	0	grw	no	wart	neg	neg	neg	neg	neg
96	21	10th	HS	UM	papules over genitalia	NO	NO	YES	YES	NO	NO	NO	3months	20	K	YES	NO	0	0	0	1	0	pap	no	MC	neg	neg	neg	neg	neg
97	33	B.cm	EDU	UM	self screening	NO	YES	YES	YES	NO	NO	NO	2months	22	K	YES	YES	0	0	1	0	0	n	no	scr	neg	neg	neg	neg	neg
98	24	10th	OTHERS	UM	NGO	NO	YES	YES	YES	NO	NO	NO	1wk	20	UK	YES	NO	0	0	0	1	0	n	yes	scr	neg	neg	neg	neg	neg
99	26	8th	HS	UM	NGO	HG	YES	YES	YES	NO	NO	NO	2weeks	18	UK	NO	YES	0	1	0	1	0	scar	no	old herpes g	neg	neg	neg	neg	neg
100	37	10th	MSW	UM	NGO	NO	NO	YES	YES	YES	NO	NO	18mths	20	UK	NO	YES	1	0	1	1	0	n	no	HIV	pos (1)	neg	neg	neg	neg