

Study of Sexual pattern, Practices and STI in Transgender population in Thoothukudi District, Tamilnadu, India

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ABSTRACT

There is a general paucity of research concerning the sexual health and sexual practices of transgender individuals. High-quality epidemiological data of TG people are needed to better assess the sexual health needs of TGs. This information could be instrumental to design targets for intensive HIV prevention strategies in this particular high risk population. In this study we have made an attempt to unravel sexual pattern, practices and STI in transgender population in Thoothukudi district, Tamilnadu, India. Various diverse partnering and sexual practices have been identified in our study. The prevalence of STI is less in the educated and health aware TG population of this geographic area in contrast to other studies

Keywords: Transgender, sexual identity, sexual pattern, sexual practices, STI

INTRODUCTION

Transgender (TG) people experience a gender identity that is different from their anatomical sex. They usually live or prefer to live in a gender role different to the one they are assigned at birth. Transgender women (TGW) are individuals whose sex assigned at birth were male and they currently self- identify as female. Transgender men (TGM) are individuals whose sex assigned at birth was female and now they identify as male. The epidemiology of HIV and sexually transmitted infections (STI) among transgender people varies widely across different populations and settings.¹ TG people are disproportionately affected by HIV and also they might be similarly susceptible to other STIs¹. Ethnicity, low socioeconomic status, changing sexual partners frequently and history of injection drug use, etc., are established correlates of HIV-positive status of this section of people². Few data are available regarding the prevalence of STI, including HIV infection, and risk behaviors of transgender individuals. There is a general

paucity of research concerning the sexual health of transgender individuals.³⁻⁵ Understanding the sexual pattern, practices and lifestyle of this high risk population is imperative to control STIs and HIV epidemic. This information could be instrumental to design targets for intensive HIV prevention strategies in this particular high risk population.

METHODOLOGY

This is a prospective observational study involving around 56 persons who self-identified themselves as TGW or TGM and were at least 18 years old attending the Outpatient clinic, Dept of Dermatology, Govt. Thoothukudi Medical College Hospital, Thoothukudi over a period of 6 months from January 2025 to June 2025. All Transgenders irrespective of the health status were enrolled in the study. For a comprehensive understanding of the vulnerable diversity that may put these individuals at risk of STIs and HIV infection, we conducted qualitative analysis among the transgender

people, aiming to identify sexual pattern and practices to unravel their distinctive social and sexual life. Various parameters like socioeconomic status, gender identity, general physical and mental health, partnering, sexual preferences and practices, drug usage, STI prevalence etc. were studied. The identified epidemiological findings, sexual practices and health related parameters were discussed.

This research project was approved by the Ethical committee at Govt. Thoothukudi Medical College, Thoothukudi. Each participant was provided with the proper and detailed information regarding the study process. An informed consent was obtained in their local language after explaining the nature of the study, including the methods, interview process, as well as possible benefits and risks.

Inclusion Criteria

Participants were eligible for inclusion if they:

- were aged 18 years or above;
- self-identified as transgender;
- were residing in or accessing healthcare services in Thoothukudi district;
- were willing to participate in the interview, clinical examination and relevant laboratory investigations; and
- provided written informed consent.

Exclusion Criteria

Individuals were excluded if they:

- were below 18 years of age;
- were unwilling or unable to provide informed consent;
- declined the interview, clinical examination or laboratory investigations; or
- were unable to provide reliable information because of an acute medical or psychological condition at the time of assessment.

Sampling and Recruitment

Participants were recruited consecutively from eligible transgender individuals attending the Dermatology, Venereology and Leprosy outpatient department during the study period. Recruitment continued throughout the six-month study period until the available eligible participants who consented to participate were enrolled.

Data Collection

Data were collected using a structured, interviewer-administered questionnaire. Information was obtained regarding age, gender identity, educational status, occupation, socioeconomic characteristics, family and social circumstances, age at gender transition, gender-affirming procedures, medication and cosmetic use,

substance use, sexual partnering, sexual preferences, sexual practices, condom and lubricant use, history of sexually transmitted infections, and healthcare access.

Because sexual behaviour and gender identity are sensitive topics, interviews were conducted individually in a private and confidential setting by trained members of the study team. Participants were allowed to decline answering any question without affecting their medical care.

Clinical Examination

All participants underwent a general and relevant dermatological and venereological examination. Particular attention was given to clinical features suggestive of sexually transmitted infections, including genital, perianal and oral lesions. Findings suggestive of other dermatological or systemic conditions were also documented.

Laboratory Investigations

Participants underwent appropriate serological investigations for HIV and syphilis as part of the STI assessment. HIV testing was performed according to the applicable national testing algorithm and institutional laboratory protocol. Syphilis screening was performed using the standard laboratory method available at the study centre. Participants with clinically suspected sexually transmitted infections were evaluated and managed according to institutional and national guidelines.

The specific laboratory tests, test kits/assays, manufacturer details, specimen type, and interpretation criteria should be reported in the final manuscript according to the actual procedures used during the study.

Assessment of Sexual Practices and Protective Measures

Sexual practices were assessed through confidential face-to-face interviews. Participants were asked about primary and other sexual partners, partner characteristics, frequency and type of sexual practices, including oral, anal and vaginal/genital practices, group sexual activity, methods of finding partners, and use of condoms and lubricants. Information regarding alcohol and other substance use in relation to sexual activity was also recorded.

Outcome Measures

The primary outcome of the study was the occurrence/prevalence of HIV and other identified sexually transmitted infections among the study participants.

Secondary outcomes included patterns of sexual partnering, sexual practices, condom and lubricant use, substance use, gender identity, socioeconomic

characteristics, healthcare awareness and other relevant behavioural and clinical characteristics.

Statistical Analysis

Data were entered into a computer-based database and analysed using appropriate statistical software. Categorical variables were presented as frequencies and percentages, while continuous variables were summarised using mean with standard deviation or median with interquartile range, as appropriate. Where applicable, associations between categorical variables were assessed using the Chi-square test or Fisher's exact test. A p-value of <0.05 was considered statistically significant.

Because of the relatively small sample size, subgroup analyses were interpreted cautiously. Where statistical comparisons were not appropriate because of small cell counts, descriptive statistics were used.

Confidentiality and Data Protection

Participant confidentiality was maintained throughout the study. Identifying information was not included in the analysis or manuscript. Study data were accessible only to authorised members of the research team and were stored securely. Results were reported in aggregate form so that individual participants could not be identified.

RESULTS

Demography

Thoothukudi district of Tamilnadu is the southernmost part of India nurturing a population about 20 lakhs. Among which about 320 persons were identified as registered transgender. Out of which 295 were TGWs and 25 were TGM. In our study, 56 TGs consented for the interview, clinical examination and serological study. In depth interview was conducted face to face taking into consideration to promote comfortable conversation by appropriate probing or recalling the discussion to the topic at hand.

The age of the participants ranged from 19 years to 54 years. Out of the 56 candidates 4 completed primary schooling, 24 middle schooling, 26 higher secondary course and 12 were degree holders. Regarding their occupation 12 were daily wages, 26 were engaged in religious rituals and practices, 5 were purely sex workers, 7 were engaged in sex work and religious activities, 6 were engaged in professions like teaching in school and college and technical persons private companies. Almost all of them possessed identity cards like Adhar (56), permanent account number (PAN)(42), driving license (5), voters card (47), ration card (43) and community identity cards issued by social welfare dept(36). Government health insurance cards were possessed by 54 persons and 2 did not have health insurance cards.

Table 1. Sociodemographic and Clinical Characteristics of the Study Participants (n = 56)

Characteristic	Category	n (%)
Gender identity	Transgender women (TGW)	53 (94.6)
	Transgender men (TGM)	3 (5.4)
Age group (years)	19–30	Not reported
	31–40	Not reported
	41–54	Not reported
Educational status	Primary schooling	4
	Middle schooling	24
	Higher secondary	26
	Degree holders	12
Occupation	Daily wage workers	12 (21.4)
	Religious rituals/practices	26 (46.4)
	Sex work only	5 (8.9)
	Sex work + religious activities	7 (12.5)
	Teaching/technical/private-sector professions	6 (10.7)
Age at gender transition	<13 years	10 (17.9)
	14–21 years	39 (69.6)
	≥22 years	7 (12.5)
Gender-affirming surgery	Any surgery	40 (71.4)

Characteristic	Category	n (%)
	No surgery	16 (28.6)
Hormonal medication use	Yes	46 (82.1)
	No	10 (17.9)
Alcohol use	Yes	50 (89.3)
Smoking	Yes	26 (46.4)
Tobacco use	Yes	11 (19.6)
Dermatological problems	Any dermatological condition	28 (50.0)
	Dermatophytosis	8 (14.3)
	Acne	20 (35.7)
Diabetes mellitus	Yes	2 (3.6)

Note: Percentages are calculated using the total study population (n = 56). Age-group distribution and some other variables were not provided separately in the manuscript and should be added only after verification of the original study records.

Table 2. Sexual Practices, Protective Measures and HIV/STI Findings among Study Participants (n = 56)

Variable	Category	n (%)
Primary partner	TGW with a regular primary partner	37 (69.8)*
	TGW without a primary partner	16 (30.2)*
	TGM with a primary partner	0 (0)
Sexual partners among TGW	Sexual contact with MSM/normal men in addition to primary partner	34
	Relationship confined to primary partner	3
	Group sex	6
	Sexual relationship among TGW	7
Sexual practices among TGW	Oral sex	53 (100.0)†
	Receptive anal sex	53 (100.0)†
	Insertive anal sex among TGW	7
Sexual practices among TGM	Oral sex with TGW	3 (100.0)
	Receptive anal sex with TGW	3 (100.0)
	Receptive vaginal sex with TGW	3 (100.0)
	Oral-genital sex with normal females	3 (100.0)
Partner-finding methods	Phone calls	36 (64.3)
	Through friends	28 (50.0)
	Public places	23 (41.1)
	Client introduction	5 (8.9)
Protective measures	Awareness/practice of HIV/STI protective measures	48 (85.7)
Alcohol use during sexual activity	Yes	52 (92.9)
Sexual pleasure/substance use	Opioid use	8 (14.3)
	Other substance use	21 (37.5)
	Sildenafil use	0 (0)
HIV testing	HIV seropositive	2
Syphilis	Syphilis reactive among HIV-positive participants	1
Anal wart	Present among HIV-positive participants	1

Variable	Category	n (%)
STI prevalence	Participants with identified STI	2 (5.0)‡

TGW denominator = 53 for TGW-specific variables. Percentages are based on 53 TGW participants. The manuscript reports an STI prevalence of 5%; this percentage should be verified against the exact denominator and diagnostic definition used in the original dataset.

TG identity

Among the study population the expression of TG identity was TGW (46), TGM (3) and Cross Dressers (7). In most that is 39 of them gender transition age was between 14 to 21 years. In 10 people transition age was below 13 years and in 7 it was above 22 years. Regarding the family set up and the nature of parenting, before transition it was normal in around 26 people, gender discrimination was there in 9 families and in 12 families there were conflicts among the parents. Gender discrimination and parental conflicts were both present in 9 families. After transition 52 TGs came out of the family and were living in the TG community, 3 were single and 1 was accepted by the family and living with the family. Regarding the social issues faced by the TGs, 22 were excluded from the social and family circle and 33 were excluded from the family circle.

After transition 40 underwent surgical correction and 16 were not. Among the people who underwent surgeries, 19 persons underwent genitals and breast surgery, 4 breast surgery alone and 17 genital surgery alone. Among the TGM 2 underwent breast reduction surgery alone. Regarding medications 46 people used hormonal drugs to enhance their gender identity. Skin brightening creams in the form of modified Kligman's formula were used by 36 people and 36 people used betamethasone cream for the same purpose. Regarding cosmetic usage, 55 were using talcum powder, eyeliners (54), lipsticks (54), blush (54) and facial hair removal (26). Almost all of the TGWs were using Bindhi, earrings and nose pins to enhance their feminine gender identity. TG men did not use any of these ornaments.

With respect of general health issues 2 were diabetics on regular treatment. Dermatological problems were seen in 28 people. Dermatophytosis was diagnosed in 8 and acne in 20 people. Various forms of psychological problems in the form of depression 38, anxiety 20, mania 5 and aggressive behavior (2). Only 1 person had severe stress regarding gender identity. Among the TGs 50 were habituated to alcohol, 26 to smoking and 11 indulged in tobacco use.

Sexual pattern of TG

Among the 53 TGW, 37 had regular primary partner and all the partners were MSM and 16 did not have any primary partner. The 3 TGM did not have primary partner but they were engaged in sexual practices with TGW and normal women but not with normal men.

Among the 37 TGW who had a primary partner 34 people had sexual contacts with MSM and normal men apart from their primary partners. 6 persons were engaged in group sex and 3 confined their sexual relationships only with their primary partner. None of the TGW had normal women as their sexual contact or partner at any point of time in their life. Similarly none of the TGM had normal men as their partner.

The means of Partner finding were, by phone calls 36, through friends 28, through client introduction 5 and in public places 23. All the TGs have the habits of using protective measures like condoms and lubricants. Sexual pleasure enhancers like opioid drugs (8), substance (21) and alcohol (52) were being used. No TGs or their sexual contacts had the habit of using drugs like sildenafil.

Sexual practices

All the TGW (53) had sexual relationship with MSM and normal male. About 7 TGW had sexual relationship among themselves. The nature of sexual practices were oral and receptive anal in all the TGWs. Among the 7 TGWs who had sex among themselves had insertive and receptive anal sexual practices among themselves.

Among all the 3 TGM had oral, receptive anal and receptive vaginal sex with TGWs. And oral genital sex with normal females.

Almost all the TGs 48 (85.7%) were aware of using protective measures for HIV and STI and practicing the same when they were engaged in sexual activity with primary partners or other sexual contacts.

On screening for STIs, 2 (5%) TGWs were seropositive for HIV and one among them was tested reactive for syphilis and had anal wart.

DISCUSSION

We studied the TG population of 56 members out of 320 TGs in Thoothukudi district, Tamilnadu, India. This sample size of 9 % is an adequate sample representing the whole TG population of this geographic area. The educational status was about HSC and Degree in more than half of the members representing a moderately educated population. Regarding their occupation most of them were engaged in other work and indulged in sexual practices with multiple partners in their leisure time. Previous studies showed that sex work is prevalent among TGWs due to stigmatization, social discrimination and for economic survival^{6,7} . Only 12

TGs were found to be primarily sex workers in our study. Transgender individuals represent an underserved, highly stigmatized, and under-resourced population not only in HIV prevention efforts but also in delivery of general primary medical and clinical care^{1,8,9}. In our study all the TGs possessed government identity cards indicating their participation and prominence in the society. Most of them 36 possessed community identity cards from the social welfare department and were getting benefitted from the Government welfare schemes revealing their social and economical awareness. Almost all of them possessed Government health insurance cards indicating a positive health awareness state.

Most children understand their gender identity between 5 and 7 years of age. Many studies found that gender dysphoria on average, is experienced prior to age 7 by the majority of TGM and TGW¹⁰. Most of our patients (39) first experienced dysphoria and gender transition between 14 to 21 during the period of physical and psychological and sexual identity development. Most of the TGs came out of the family and were living in the TG community because of rejection and non acceptance by the family circle and the society similar to the previous studies¹¹. Many of the TGs (40) underwent surgical correction to enhance the gender identity. Most of TGWs were using cosmetics and ornaments worn by the local female population to reveal their transformed gender identity.

Almost all of the TGs enrolled in this study had mental health problems in contrast to only 13.6% prevailing in the general population¹²⁻¹⁴. Numerous studies showing that transgender individuals are at greater risk of mental-health conditions compared to the general population¹²⁻¹⁴. Poor mental health often stems from discrimination and rejection from individuals' families and communities¹⁴. In our study also significant number of TGs (68%) had suffered from mental health problems. Similarly in our study also alcohol and drugs habituation were more in TGs when compared to the general population².

Compared to straight communities the TG community has more diverse partnering types. There are differences in individual's inclinations to have primary partners between the TGs and straight communities. Unlike the straight community, members of the TG community have less opportunity to select their sexual partner. Thus, the basis of their social life activities is mainly directed at satisfying their sexual desires. They do not confine 'sex' to an activity for reproduction; rather they seek to attain sexual pleasure as a self satisfying natural activity. Having a primary partner does not necessarily mean TGs would not have concurrent sexual partnerships^{15,16}. Thirty seven of participants who had primary partners stated that they had more sex partners other than their primary partner. Thus, having a primary partner did not

indicate exclusivity in their sexual relationships. Various diverse partnering have been identified in our study. Four types of partnering in TGWs have been identified in our study. Most of the TGWs 37 had regular primary partner though they indulge in sexual practices with normal men and MSM. 6 TGWs engaged in group sex and 3 confined sexual relationship with their primary partner. Another 7 TGWs had sexual relationship among themselves. In TGM, only 2 types of partnering identified. They didn't have a primary partner but had sexual relationships with TGW and normal women. This pattern of partnering is in accordance to the previous studies^{15,16}. A peculiar finding was identified in our study population was that no TGW showed sexual inclination towards normal females and no TGM was sexually interested in normal males. The means of partner finding was through phone calls, friends, clients and in public places and not by internet or dating apps as mentioned in many studies even in this internet era¹⁷.

The nature of sexual practices in TGW and TGM were similar to other studies^{18,19}. In our study the nature of sexual practices in TGW were oral and receptive anal intercourse when they had sexual relationship with normal males and MSM. When they had sexual relationships among themselves they practiced oral, insertive and receptive anal intercourse. TGM had oral, receptive anal and receptive vaginal intercourse with TGW and oral genital sex with normal females.

In contrast to many other studies conducted in various countries^{1,9,20} in our study almost all the TGs were aware of using protective measures for HIV and STI and practicing the same when they were engaged in sexual activity with their primary partners and other sexual contacts.

Transgender communities worldwide, particularly those on the TGW spectrum, are disproportionately burdened by HIV infection and at risk for HIV acquisition/transmission. Globally, HIV infection is devastatingly high among trans feminine people. A meta-analysis of global studies with laboratory-confirmed HIV infection data a HIV prevalence of 19% among TGW individuals and a 49-fold increased odds of HIV infection compared with normal adults of reproductive age^{1,7,9}. In our study, 2 were tested seropositive for HIV. One among the HIV seropositive tested positive for Syphilis and had anal warts. The prevalence of STI among the study members was only 5% when compared to the other studies where the prevalence was more^{1,7,9,19}. This could be due to the use of protective measures which are practiced regularly in our study population.

Strengths of the Study

This study has several strengths. First, it prospectively assessed transgender individuals attending a dedicated clinical setting over a defined six-month period. Second,

the study explored multiple dimensions of transgender health, including gender identity, socioeconomic characteristics, partnering patterns, sexual practices, substance use, general health, mental health and sexually transmitted infections. Third, the study included face-to-face, in-depth interviews along with clinical examination and serological assessment, allowing collection of both behavioural and clinical information. Fourth, the study provides region-specific data from the transgender population of Thoothukudi district, an area for which locally relevant sexual-health data are limited. Finally, the findings provide useful information regarding protective-measure awareness, sexual practices and STI occurrence that may help inform targeted sexual-health education and HIV/STI prevention strategies.

Limitations of the Study

The study has certain limitations. The sample size was relatively small, with 56 participants, and the study was conducted at a single tertiary-care centre, which may limit the generalisability of the findings to transgender populations in other regions. The study population was clinic-based and may therefore not represent transgender individuals who do not access healthcare services. The study relied partly on self-reported information regarding sexual practices, substance use and other sensitive behaviours, which may be affected by recall or social-desirability bias. In addition, the cross-sectional assessment of STI status does not allow determination of temporal or causal relationships between behavioural factors and STI occurrence. The relatively small number of participants also limits subgroup comparisons between TGW, TGM and other gender identities.

Future Research / Recommendations

Future studies should include larger, multicentre and community-based transgender populations to improve the representativeness and generalisability of findings. Longitudinal studies are needed to evaluate changes in sexual practices, HIV/STI incidence and healthcare access over time. Future research should also assess barriers to STI screening, HIV testing, vaccination, mental-health services and gender-affirming healthcare. Community-based interventions focusing on sexual-health education, consistent condom and lubricant use, regular STI screening, HIV prevention and substance-use reduction should be developed and evaluated. Further studies should also explore the role of social stigma, family acceptance, socioeconomic conditions and access to healthcare in determining sexual-health outcomes among transgender individuals.

CONCLUSION

In a society that exhibits a predominantly patriarchal culture and largely consists of a single ethnicity,

treatment of TG as ‘others’ and hostility against TGs weakens their identity. This study has brought into light the nature of partnering, various sexual pattern and practices in the TG community. This study has also revealed that gender preferences of the TGs that they did not show sexual interest to the individuals of their primary biological sex. The prevalence of STI is less in the educated and health aware TG population in contrast to other studies. Hence improving the educational status and health awareness in TGs will remarkably reduce the incidence of STI in this high risk population.

DECLARATIONS

Consent for Publication

Not applicable. No individually identifiable personal information or identifiable images of participants are presented in this manuscript.

Availability of Data and Materials

The datasets generated and/or analysed during the current study are not publicly available because they contain sensitive participant information but may be made available from the corresponding author on reasonable request, subject to appropriate ethical and institutional considerations.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

Santhiya Vadhana A: Study conception and design, data collection, clinical assessment, data interpretation and manuscript preparation.

Thadeus J: Study supervision, clinical assessment, interpretation of findings and critical revision of the manuscript.

Ajay F: Data collection, clinical assessment, data interpretation and critical revision of the manuscript.

All authors reviewed and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

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Clinical Trial Registration

Not applicable. This was a prospective observational study and was not registered as an interventional clinical trial.

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