

# The Current Status of Sexually Transmitted Infections/ Reproductive Tract Infections in Vadodara City: Health-care Provider Perspective

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## Abstract

**Background:** Sexually transmitted infections (STIs) and reproductive tract infections (RTIs) are a major public health problem worldwide, affecting the quality of life and causing serious morbidity and mortality. STIs/RTIs have a direct impact on reproductive and child health through infertility, cancers and pregnancy complications, and they have an indirect impact through their role in facilitating the sexual transmission of human immunodeficiency virus. **Objectives:** (1) To estimate the number/proportion of cases of STI/RTI being treated by health-care providers. (2) To document investigations being prescribed for diagnosis. (3) To document treatment protocols being used by health-care providers for STI/RTI management. **Methodology:** This was cross-sectional study conducted in Vadodara city. A total of 118 health-care providers were interviewed by using pre-tested semi-structured questionnaire regarding the current status of STIs/RTIs, proportion of STIs/RTIs patients, investigation and managements. **Results:** Proportion of STI/RTI patients out of all outpatient department patients ranges from 1.03% for general practitioners (GPs), 2.86% for skin and venereal disease (VD), and 15% for obstetricians and gynecologists consultants. Use of investigation for the diagnosis of STI/RTI is minimal among obstetricians and gynecologists specialists (29.41%) and GPs (54.55%). Use of guidelines for the management of STI/RTI is not equal across consultants. Guidelines were followed by 67.50% of skin and VD consultants, 32.35% of obstetricians and gynecologists consultants, and 18.18% of GPs. **Conclusion:** There is considerable variation in treatment-seeking and the use of standardized treatment protocols for the management of STI/RTI by the government as well as private providers.

**Keywords:** Health-care providers, reproductive tract infections, sexually transmitted infections

## INTRODUCTION

Sexually transmitted infections (STIs) and reproductive tract infections (RTIs) are a major public health problem worldwide, affecting the quality of life and causing serious morbidity and mortality. STIs/RTIs have a direct impact on reproductive and child health through infertility, cancers and pregnancy complications, and they have an indirect impact through their role in facilitating the sexual transmission of human immunodeficiency virus (HIV), and thus, they also have an impact on national and individual economies. Worldwide, more than a million curable STIs/RTIs are acquired every day. In 2012, there were an estimated 357 million new cases of curable STIs among adults aged 15–49 years worldwide: 131 million cases of chlamydia, 78 million cases of gonorrhoea, 6 million cases of syphilis, and 142 million cases of trichomoniasis.<sup>[1]</sup>

The prevalence of some viral STIs is similarly high, with an estimated 417 million people infected with herpes simplex virus Type 2 (HSV-2), and approximately 291 million women harboring human papilloma virus at any point in time.<sup>[2]</sup> The burden of STIs/RTIs varies by region and gender and is greatest in resource-poor countries. STIs/RTIs are an important public health problem in India. In India, around 6% of the adult population has one or more STI/RTI which amounts to the occurrence of about 30–35 million episodes of STI/RTI every

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year.<sup>[3]</sup> Controlling STI/RTI helps to decrease HIV infection rates and provides a window of opportunity for counseling on HIV prevention and improving sexual and reproductive health. Gujarat state estimated an annual incidence of 1.8 million STI/RTI episodes in the state.<sup>[4]</sup> Data suggest that treatment preference of STI/RTI patients are government clinic (7%), private modern medicine practitioners (56%), nonmodern medicine practitioner (20%), and do nothing (17%).<sup>[5]</sup> The National AIDS Control Programme IV (NACP IV) acknowledges the need for engaging with both organized public sector and private sector in the provision of STI/RTI services. The health services of these organizations and individual providers in private practice are highly encouraged to use and adhere to the National STI/RTI guidelines. This will help to standardize and scale up the STI/RTI management services. Universal adherence to standardized drug regimens helps to reduce the emergence of drug resistance.<sup>[3]</sup> However, the treatment regimens followed and preached by the different health providers and setups are different; the National AIDS Control Organisation (NACO) follows the syndromic approach of treatment, while private service providers rely on their clinical judgment for management of STIs/RTIs.<sup>[6]</sup> To the best of our knowledge, there are no studies that have tried to understand different modes of management for STIs in government and private setups. The purpose of this study was to understand the current status of STI/RTI in Vadodara city in terms of its occurrence and management in the public and private health sectors from the perspective of providers.

## METHODOLOGY

This cross-sectional study was carried out from July 2015 to November 2016 in Vadodara city. After obtaining approval from the Institutional Ethics Committee of Baroda Medical College and SSG Hospital, data were collected from health-care providers in public and private sector involved in STI/RTI management. In private setup, there were total 31 skin and venereal disease (VD) specialists, 161 obstetricians and gynecologists, and 305 general practitioners (GPs) in Vadodara city (Source: Lions Club of Baroda, Baroda medical guide, GPs Association). The sample size had included all skin and VD specialists since they were mainly involved in treating STIs/RTIs. Equal number of obstetricians and gynecologists (which came to 20% of the total obstetricians and gynecologists, i.e. 32) and double the number of GPs (20% of total GPs, i.e. 61) were included to have comparable group of each specialty. The number was doubled in case of GPs to give fair representation to the group considering their number. Heads of the Department of Skin and VD and Obstetrics and Gynaecology from the three major government hospitals were interviewed. Thirty-three private Skin and VD specialists and seven consultants from government hospital were interviewed. It was initially decided to interview 31 private Skin and VD specialists from the list of available data. Of these, nine were not included (two refusals [reasons not given], two doing exclusive cosmetic practice, and five not

practicing currently). The other 11 specialists were interviewed by snowballing and getting information about them from 22 enrolled consultants during interviews (who were not listed in the directory). As per the methodology, 32 private obstetrics and gynecology specialist were to be interviewed, of which one refused to participate. Thus, 31 private obstetrics and gynecology specialist and three from Government Hospitals were interviewed. It was decided to interview 61 GP as per sample. Of these, five refused to participate in the study, 12 GP mentioned that patients did not come to them for STI/RTI. Thus, 44 GPs were enrolled in the study. We could not cover the predecided sample size of 61 GPs due to change of address or incorrect contact details in the available list. Selected health-care providers were contacted telephonically/in-person, and appointment was taken. Written informed consent was obtained prior to the interviews, and information related to trend of STI/RTI, laboratory investigation and treatment was collected using pretested semi-structured pro forma containing information regarding the number of daily patients seen, proportion of STI/RTI patients, most common STI/RTI condition seen in practice, other STI/RTI conditions, documentation of investigation prescribed, use of any guidelines for treatment, monitoring response to prescribed treatment, their perception about STI/RTI trends, training or continuing medical education (CME) on STI/RTI attended, reporting of data to government and advising patients for treatment of partner. The data were entered in Microsoft Office Excel Worksheet 2007. Percentages and proportions were calculated for descriptive statistics. Chi-squared test was used for categorical data using Epi Info 7, (CDC, Atlanta).

## RESULTS

We got a response from 40 Skin and VD specialists, 34 obstetrics and gynecology specialist, and 44 GP. We could not cover the predecided sample size of 61 GPs due to change of address or incorrect contact details in the available list. The proportion of STI/RTI patients to monthly general outpatient department (OPD) patients was 2.86% for Skin and VD specialists, 15% for obstetrics and gynecology specialist, and 1.03% for GPs [Table 1]. The most common STI/RTI condition seen by Skin and VD specialists was herpes genitalis. Thirty (75%) of 40 skin specialist interviewed responded that in their practice herpes genitalis was the most common STI/RTI. Five percent of skin specialist responded that chancroid and herpes most common STI/RTI. Out of total 34 obstetrics and gynecology specialist interviewed, 11 (32.35%) had responded that T vaginalis was most STI/RTI condition seen by them in practice. Six (17.65%) had responded that candidiasis was the most common condition. Five (14.71%) had responded that vaginal discharge was the most common. Four (11.76%) each had responded B vaginosis, mixed infections was the most common STI/RTI condition. Two (5.88%) had responded chlamydia trachomatis was the most common STI/RTI condition seen by them. One (2.94%) each had responded cervicitis and syphilis were the most common conditions seen

**Table 1: Monthly general outpatient department and sexually transmitted infection/reproductive tract infection patients seen by health-care providers**

Designation	Median patients seen (monthly)	Median STI/RTI patients seen (monthly)	Proportion of STI/RTI patients (%)
Skin and VD	910.0	26	2.86
Obstetricians and gynaecologists	520.0	78	15
GP	780.0	8	1.03

STI: Sexually transmitted infections, RTI: Reproductive tract infections, GP: General practitioner, VD: Venereal disease

by them in practice. Out of 44 GPs (M.B; B.S), 19 (43.18%) had responded that N gonorrhoea was the most common STI/RTI condition seen by them in practice. Eight (18.18%) had responded that T vaginalis was the most common condition seen by them in practice. Six (13.64%) had responded that vaginal discharge was the most common condition seen in practice. Three (6.82%) had responded syphilis, 2 (4.55%) had responded candidiasis, 2 (4.55%) had responded chancroid, 2 (4.55%) had responded nonspecific gonococcal urethritis, 1 (2.27%) had responded herpes genitalis, 1 (2.27%) had responded herpes was the most common condition seen in their practice. Twenty-seven (67.5%) out of 40 skin and VD specialists were using specific guideline for the management of STI/RTI. Eleven (32.35%) out of 34 obstetricians and gynecologists. Specialists were using specific guideline for the management of STI/RTI. Only 8 (18.18%) of 44 GPs were using specific guideline for the management of STI/RTI. Other health-care providers had responded that they decide treatment clinically. Table 2 suggests that there was a significant decline in the use of specific guidelines with increasing years in practice.

## DISCUSSION

The present study was carried out to understand the current status of STI/RTI in Vadodara city with respect to their occurrence and management. There was no study available that had studied the status of STI/RTI and management with respect to the health-care provider's perspective. Anecdotal evidence from discussions with consultants of skin and VD suggested a decline in the prevalence of STIs, especially syphilis. However, newly acquired HIV infections were not consistent with this premise. This would suggest that HIV infection was acquired without having suffered from any other STI. Alternately, it could also be because cases of STI sought treatment from health-care providers other than government ones. This study tried to explore whether there is an actual decline in STI regardless of the prevalence of HIV infection or there is a shift in treatment-seeking behavior from the government to private providers. There is a possibility that some patients of STI seek treatment from nonallopathic health-care providers or indigenous healers but due to the lack of data on their numbers they would not be included in the sample, which remain one of the limitations of this study. The proportion of STI/RTI patients to their total OPD for skin and VD specialist was 2.86%, for obstetricians and gynecologists 15% and for

GP 1.03% [Table 1]. In our study, 67.65% of obstetricians and gynecologists consultants were female as compared to 25% of Skin and VD and 18.18% of GPs [Table 3]. The proportion of STI/RTI patients to total OPD was the highest for obstetricians and gynecologists specialists. It may be possible that female patients prefer obstetricians and gynecologists. Specialist (lady doctor) for STI/RTI conditions; therefore, the proportion of obstetricians and gynecologists specialist was more. A study carried out by Vora *et al.* found that 0.85% of the total male skin outpatient department patients had proven STI.<sup>[7]</sup> Lau *et al.* also found that prevalence of sexually transmitted diseases (STD)/RTI syndromes (of any type) among all private patients was 0.75% (GP: 0.63%, obstetricians and gynecologists: 3.94%, D and V: 1.83%).<sup>[8]</sup> In our study, majority (75%) of skin and VD specialist and 2.27% of GP responded that herpes genitalis was the most common STI in their practice. Apart from them, 15% skin and VD specialist, 8.82% of obstetricians and gynecologists specialist, and 2.27% of GP responded that herpes genitalis was seen in their practice. Patient-based study carried out in a tertiary care hospital by Saini *et al.* also found that herpes genitalis (30.76%) was the most common STI followed by condyloma acuminata (13.76%) and molluscum contagiosum (5.3%) in male patients and among female, the most common STI was combination of cervicovaginal discharge 48 (55.81%).<sup>[9]</sup> A study carried out by Devi *et al.* at STI clinic in tertiary care hospital in Puducherry found that herpes genitalis was the most common ulcerative STI.<sup>[10]</sup> Study carried out by Jain *et al.* at STD clinic in medical college Rohtak by using retrospective data concluded that herpes genitalis was the most common STD.<sup>[11]</sup> Thus, our findings are consistent with other studies. In the present study, 32.35% obstetrics and gynecology specialists responded that Trichomonasvaginalis was the most common STI in their practice and 18.18% of GP said Trichomonasvaginalis was the most common STI among female patients. Community-based study carried out among urban and rural women in Surat by Kosambiya *et al.* found that Trichomoniasis was most prevalent laboratory confirmed infection in women.<sup>[12]</sup> Our finding is consistent with this study. Forty-three percent of GP responded that gonorrhoea was the most common STI/RTI condition in their practice. Apart from this, almost 16% of GP answered that they were seeing gonorrhoea in practice. On contrary to this, none of Skin and VD specialist said that gonorrhoea was the most common STI in their practice and only 35% of Skin and VD specialist answered that they were seeing gonorrhoea in practice. This result suggests that nowadays treatment of gonorrhoea is

primarily sought from GPs. In this study, we found 80% of Skin and VD specialist, 29% of obstetricians and gynaecologists, and 55% of GPs prescribing investigations for the diagnosis of STI/RTI [Figure 1]. Findings suggest that Skin and VD specialist usually prescribing investigations for the diagnosis of STI/RTI. Obstetricians and gynaecologists specialists were not regularly prescribing investigation for STI/RTI, they were prescribing investigations for recurrent STI/RTI cases. Majority of obstetricians and gynecologists and GPs prescribe investigations for the diagnosis of syphilis and hepatitis B. The consultants commented that patient's ability to pay is also a consideration for prescribing investigations. Therefore, it is evident that though most clinicians would prefer to have supportive evidence of investigations, their prescription of the same is variable balancing their clinical judgment and ability of the patients to pay for the investigations. In this study, we

found that providers were prescribing venereal disease research laboratory (VDRL), treponema pallidum hemagglutination assay (TPHA) and rapid plasma regain (RPR) for Syphilis. Anti-HSV-1, 2 IgG, IgM antibody test, tzanc smear, giemsa stain for herpes infection, hepatitis B virus surface antigen for hepatitis B, anti-hepatitis C virus antibody test for hepatitis C, and potassium hydroxide (KOH) preparation for candidiasis, gram smear for gonorrhea and vaginal discharge, blood sugar for diabetes mellitus in candidiasis patient, and urine examination for gonorrhea [Table 4]. A study carried out by Arakkal *et al.* noted investigational reports such as grams stain and culture, fine-needle aspiration cytology, tissue smear, urethral smear, tzanc smear, KOH, wet mount preparations, chest X-ray along with serological tests such as ELISA, rapid tests for HIV, RPR, VDRL and TPHA for Syphilis were advised.<sup>[13]</sup> In this study, we found that 67.5% of Skin and

**Table 2: Relation of years in practice and use of guidelines for management of sexually transmitted infections/reproductive tract infections**

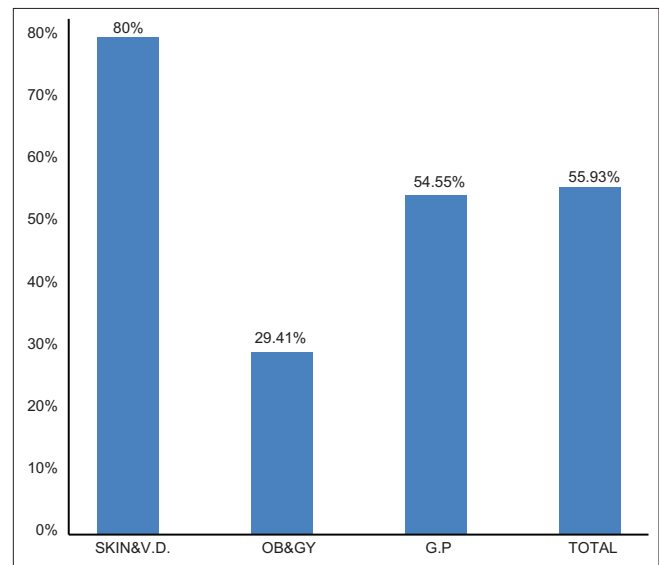
Years of practice	Number of health-care providers (%)	Number of providers using specific guidelines
1-10	27 (22.88)	15 (55.56)
11-20	25 (21.19)	12 (48)
21-30	40 (33.90)	15 (37.5)
>30	26 (22.03)	4 (15.38)
Total	118 (100)	46 (38.98)

$\chi^2$  (for trends)=9.349, df=1, P=0.0022

**Table 3: Gender-wise distribution of study participants**

Designation	Male (%)	Female (%)
Skin and VD	30 (75)	10 (25)
Obstetricians and gynaecologists	11 (32.35)	23 (67.65)
GP	36 (81.82)	8 (18.18)
Total	77 (65.25)	41 (34.75)

VD: Venereal disease, GP: General practitioner



**Figure 1: Percentage of health-care providers prescribing investigations for the management of sexually transmitted infections/reproductive tract infections**

**Table 4: Investigations prescribed by health-care provider for the management of sexually transmitted infections/reproductive tract infections**

Investigations	Skin and VD (n=32), n (%)	Obstetricians and gynaecologists (n=10), n (%)	GP (n=24), n (%)
VDRL	30 (93.75)	7 (70)	13 (54.17)
Gram stain	13 (40.63)	6 (60)	5 (20.83)
Anti HSV-2 IgG and IgM AB	11 (34.38)	-	-
TPHA	7 (21.88)	-	-
HBsAG	7 (21.88)	8 (80)	12 (50.00)
Anti HCV AB	5 (15.63)	1 (10)	3 (12.50)
Tzanc smear	4 (12.50)	-	-
KOH	4 (12.50)	-	-
RPR	3 (9.38)	1 (10)	-
Blood sugar	3 (9.38)	-	2 (8.33)
Giemsa stain	1 (3.13)	-	-
Urine routine and micro	1 (3.13)	-	8 (33.33)

VDRL: Venereal disease research laboratory, RPR: Rapid plasma regain, TPHA: Treponema pallidum hemagglutination assay, GP: General practitioner, HSV: Herpes simplex virus

**Table 5: Guidelines used by health-care providers for the management of sexually transmitted infections/reproductive tract infections**

Designation	n	SCM (%)	WHO (%)	CDC (%)	MAYO clinic
Skin and VD	27	26 (96.30)	-	1 (3.70)	-
Obstetricians and gynaecologists	11	7 (63.64)	2 (18.18)	2 (18.18)	00
GP	8	7 (87.50)	-	-	1 (12.50)

SCM: Syndromic Case Management (NACO), CDC: Center for Disease Control, Atlanta, WHO: World Health Organization, GP: General practitioner, VD: Venereal disease

VD specialists, 32.35% of obstetricians and gynecologists specialists, 18.18% of GPs used specific guideline for the management of STI/RTI. Other health-care providers had responded that they decide treatment clinically. Among those who were using specific guidelines for management, 96% Skin and VD specialists, 65% of obstetricians and gynaecologists specialists, and 88% of GP used syndromic case management guidelines of NACO [Table 5]. There was significant decline in the use of guidelines with increase in years in practice [Table 2]. In government setup consultants strictly follow NACO guidelines. Other guidelines used by private health-care providers were guidelines of the Centers for Disease Control and Prevention (CDC) Atlanta, WHO and Mayo clinic [Table 5]. CDC guidelines focus on treatment and counseling and do not address other community health-care interventions that are essential to STD/HIV prevention efforts. We got response from some private providers regarding the syndromic case management, that, they thought they were meant for government doctors and not for private providers. A perception that needs correction. The NACP IV acknowledges the need for engaging both organized public sector and private sectors in provision of STI/RTI healthcare. The providers of these organizations and individual providers in private practice are highly encouraged to use and adhere to the National STI/RTI guidelines. This would help to standardize and scale up the STI/RTI management. Universal adherence to standardized drug regimens helps to reduce emergence of drug resistance.<sup>[3]</sup>

### Recommendations

There should be uniform guideline for management of STI/RTI for government as well as private service providers, which requires advocacy by SACS and evaluating the effect of CMEs on treatment practices. Programmatic intervention should be strengthened for data reporting regarding STI/RTI. Data triangulation methods can be evaluated for implementation.

### Limitation of study

The study could not include AYUSH practitioners, though they could also be service providers for STI/RTI. In the absence of a formal association, we could not get a list from which a sample could be drawn.

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### Conflicts of interest

There are no conflicts of interest.

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