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Original Research Article

Changing trends in sexually transmitted diseases during a seven year period- A retrospective study in STD clinic of a tertiary care hospital

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ABSTRACT

Introduction: Sexually Transmitted Diseases (STD) shows various trends in different parts of the country and constitute a major public health problem for both developing and developed countries. STD's increases the risk of transmission of Human Immuno Deficiency virus (HIV) infection causing immense need to understand the patterns of STD's prevailing in the regions of a country for proper planning and implementation of STD control strategies.
Aim: To know the pattern of STDs and to analyze the changes during a 7 year period among patients attending the STD clinic at the tertiary care centre.
Materials and Methods: A retrospective analysis of data collected from the clinical records of patients attending the STD clinic of a tertiary care hospital, Mysuru over a period of 7 years (from Jan 2010 to Dec 2016).
Results: During this 7 years period, a total of 1,98,991 patients attended Skin and STD Department on out-patient basis, among them 2,111(1.06%) were STD patients [1057 males and 1054 females]. Majority were married (89.86%). The most common STD in males was balanoposthitis (32.92%) and in females was vaginal /cervical discharge (28.42%). Among genital ulcer diseases herpes genitalis was most common and increased gradually while Syphillis and Chancroid declined during the study period. Gonococcal urethritis was seen among 4.69% and LGV only in 0.14% (3 cases). HIV seropositivity in the study population was 7.25%.
Conclusion: Bacterial STD's showed a gradual reduction in number while fungal and viral STD's showed increasing trends.

1. Introduction

Sexually Transmitted Diseases are a global health problem but their prevalence rates are higher in developing countries where STD treatment is less accessible.[1] STDs are commonly more active than other prevailing infection in the community amongst the sexually active population and the epidemiological profile is very distinct.[2]

Due to lack of adequate infrastructure in the country, information regarding the profile of STDs relies essentially on syndromic diagnosis.[3,4] STDs show various trends in different part of the country and increases the risk of transmission of Human Immuno Deficiency virus (HIV) infection[3] causing immense need to understand the patterns of STDs.

2. Materials and Methods

A retrospective analysis of data collected from the clinical records of patients attending the SKIN & STD department of a tertiary care hospital Mysuru over a period of 7 years (from Jan 2010 to Dec 2016).

Cases diagnosed based on the clinical presentation and investigations available in the hospital. Sexually

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Transmitted Infections (STIs) are categorized in different syndromes as depicted by NACO in the syndromic management of STIs. The syndromes depicted by NACO are urethral discharge, vaginal discharge, genital ulcer disease- herpetic and nonherpetic (GUD-H and GUD-NH), inguinal bubo, lower abdominal pain, scrotal swelling, etc. STIs, which are not included in the syndromic management such as molluscum contagiosum, condyloma acuminata and balanoposthitis were also included.

The STD profile studied in this 7 years period were compiled calendar year wise.

(January 2010 to December 2016)

2.1. Statistical analysis

All the data was entered and analyzed using Microsoft excel sheet. Descriptive statistics for categorical variables like proportions were calculated.

3. Results

A total of 1,98,991 patients attended Skin and STD Department on outpatient basis, among which 2,111 cases (1.06%) were new STD patients. The total prevalence of new STD cases was 10.61 per 1000 patients.

Among the registered cases 1057 were males and 1054 females. During years 2010, 2011, 2014, 2015 and 2016 males outnumbered females whereas in 2012 and 2013 females outnumbered males.

Majority were married i.e 1897 cases (89.86%) and unmarried constituted around 214 cases (10.14%).

769 cases (36.43%) belonged to the age group of 21-30years, followed by 699 cases (33.11%) belonged to age group of 31-40 years and least was found among <20 years of age i.e 98 cases (4.64%). Youngest patient was 16 years old and eldest was 67 years of age.

526 cases (24.92%) were illiterates, 670 cases (31.74%) had education between 1^{st} standard to 7^{th}, 755 cases (35.86%) had education between 8^{th}standard to 12^{th} and remaining 160 cases (7.58%) were graduates.

In the occupation groups, majority were housewives (674 cases- 31.93%), followed by agriculturists (596 cases-28.23%), Cooli workers (319 cases-18.52%), Drivers (87 cases-4.12%), and businessmen (139 cases-6.58%).

The most common STD in males was balanoposthitis (32.92%, i.e 695 cases) and in females was vaginal/cervical discharge (28.42%). Among the vaginal discharge majority of them were of candidal etiology. Genital ulcer diseases constituted about 451 cases (21.36%), among which herpes genitalis was most common that is 311 cases (14.73%) followed by Syphillis (68 cases- 3.22%), Chancroid (58 cases- 2.74%), Donovanosis (11 cases- 0.52%) and LGV (3 cases -0.14%). Gonococcal urethritis was seen among 99 cases (4.69%).

As shown in the Table 1 . Among genital ulcer diseases, genital herpes cases gradually increased during study period from 2010 to 2016, while chancroidal ulcer cases reduced in number where as Syphilis cases gradually decreased in number from 2010 to 2015 and again raised in 2016.

Candidial Balanophosthitis cases increased in number from 2010 to 2013, with a sudden dropout in the year 2014, subsequently there was gradual increase in number from 2015 to 2016 as depicted (Table 1). Correspondingly vulvovaginitis of candidial origin showed sudden fall during the year 2014 and there was gradual increase in 2015 and 2016.

STD's which are not included in the syndromic management like genital molluscum contagiosum (65 cases-3.07%) and genital wart (178 cases-8.43%) were also commonly seen.

From 2010 to 2016 percentage of Genital molluscum contagiosum significantly declined and that of genital warts showed slight reduction as depicted (Table 1).

Overall this study showed a slight declining trend in bacterial STD's and increasing trend of fungal and viral STDs as shown (Table 1).

Screening for HIV infection was done in all 2111 cases and the test was positive in 153 cases showing HIV seropositivity of 7.25% in the study population.

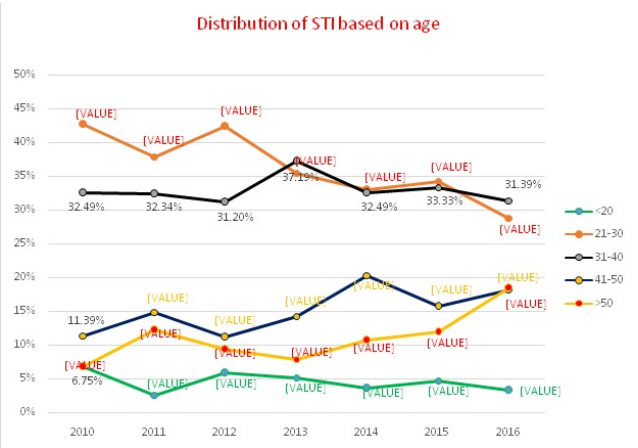

Fig. 1: Distribution of STI based on age

4. Discussion

Most of the STI cases belonged to the age group of 21-30 years and 31-40years which was also the predominant age group observed to have STI in other Indian studies.[3,9–11] This is the sexually active age group who are at high risk of being behaviorally more vulnerable to STI acquisition as they generally have higher number of sexual partners and change partners more often than older age groups.[12] Although the teenagers were not spared, we did not have very high percent of STD cases in this group as shown

Table 1: Pattern of STDs

Year	Vulvo Vaginitis	Gonococcal Urethritis	Genital Ulcer disease					Balanophosthitis	Moloscum Contagisum	Genital wart	Others	Grand Total
			Syphillis	Chancroid	Genital Herpes	LGV	Donovanosis					
2010	58 (24.79%)	26 (11.12%)	12 (5.13%)	12 (5.13%)	24 (10.26%)	0 (0%)	1 (0.43%)	57 (24.36%)	22 (9.41%	22 (9.41%)	3	237 (100%)
2011	78 (28.58%)	22 (8.06%)	3 (1.1%)	10 (3.67%)	22 (8.06%)	1 (0.37%)	0 (0%)	95 (35.32%)	12 (4.4%)	26 (9.53%)	0	269 (100%)
2012	124 (33.34%)	21 (5.65%)	8 (2.16%)	11 (2.96%)	41 (11.03%)	1 (0.27%)	3 (0.81%)	110 (29.57%)	15 (4.04%)	38 (10.22%)	3	375 (100%)
2013	113 (27.84%)	16 (3.95%)	10 (2.47%)	12 (2.96%)	74 (18.23%)	1 (0.25%)	2 (0.5%)	138 (34%)	9 (2.22%)	31 (7.64%)	0	406 (100%)
2014	49 (25.66%)	5 (2.62%)	2(1.05%)	6 (3.15%)	37 (19.38%)	0 (0%)	2 (1.05%)	77 (40.32%)	2 (1.05%)	11 (5.76%)	6	197 (100%)
2015	97 (30.6%)	7 (2.21%)	9 (2.84%)	6 (1.9%)	58 (18.3%)	0 (0%)	1 (0.32%)	106 (33.44%)	5 (1.58%)	28 (8.84%)	1	318 (100%)
2016	81 (27.1%)	2 (0.67%)	24 (8.03%)	1 (0.34%)	5 (18.4%)	0 (0%)	2 (0.67%)	112 (37.46%)	0 (0%)	22 (7.36%)	10	309 (100%)
Total	600 (28.42%)	99 (4.68%)	68 (3.22%)	58 (2.74%)	311(14.73%)	3 (0.14%)	11 (0.52%)	695 (32.92%)	65 (3.07%)	178 (8.43%)	23 (1.09%)	2111 (100%)

Table 2: Profile of HIV Positivity in STD Patients

Year	Number of STD Cases	Investigation ICTC positive cases (%)
2010	237	28(11.81%)
2011	269	21(7.8%)
2012	375	23(6.1%)
2013	406	27(6.6%)
2014	197	31(15.7%)
2015	318	11(3.4%)
2016	309	12(3.8%)
Total	2111	153(7.24%)

Table 3: Occupation of STD Patients

Year	Occupation of patients						
	Agriculture	Housewife	Cooli	Business	Driver	Other	Total
2010	46(19.41%)	70(29.54%)	43(18.14%)	8(3.37%)	16(6.75%)	54 (22.78%)	237 (100%)
2011	58(21.56%)	113(42.01%)	31(11.52%)	29(10.78%)	24(8.92%)	14 (5.2%)	269 (100%)
2012	53(14.13%)	150(40%)	68(18.13%)	25(6.66%)	23(6.13%)	56 (14.93%)	375 (100%)
2013	103(25.37%)	136(33.5%)	103(25.37%)	18(4.43%)	7(1.72%)	39 (9.61%)	406 (100%)
2014	82(41.62%)	41(20.81%)	49(24.87%)	04(2.03%)	2(1.02%)	19 (9.64%)	197 (100%)
2015	140(44.03%)	83(26.1%)	48(15.09%)	11(3.45%)	3(0.94%)	33 (10.38%)	318 (100%)
2016	114(36.89%)	81(26.21%)	49(15.86%)	44(14.23%)	12(3.88%)	9 (2.91%)	309 (100%)
Total	596(28.23%)	674(31.93%)	391(18.52%)	139(6.58%)	87(4.12%)	224 (10.61%)	2111 (100%)

Table 4: Comparison with other studies

Disease	Present Study	Jain V K et al.[5] Rohtak	L Saika et al.[6] Assam	Kavina B K et al.[7] Ahmedabad	Chandragupta et al.[8] Kakinada	
					1st spell %	2nd spell %
Syphillis	68(3.22%)	257(16.67%)	32(17.2%)	109(14.2%)	1.74	0.40
Chancroid	58(2.74%)	73(4.74%)	11(5.9%)	69(9.04%)	0.48	-
Herpes Genitalis	311(14.73%)	482(31.26%)	21(11.3%)	247(32.37%)	6.80	3.50
Acute Gonococcal Urethritis	122(8.18%)	186(12.06%)	13(7%)	83(10.88%)	2.20	0.50
Non Gonococcal Urethritis	-	78(5.06%)	20(10.8%)	18(2.36%)	2.80	0.90
Donovanosis	11(0.52%)	1(0.06%)	-	3(0.4%)	0.30	0.01
Lymphogranuloma Venereum	3(0.14%)	7(0.45%)	9(4.8%)	1(0.13%)	1.04	0.18
Condyloma Accuminatum	178(8.43%)	421(27.30%)	28(15%)	77(10.09%)	2.90	1.80

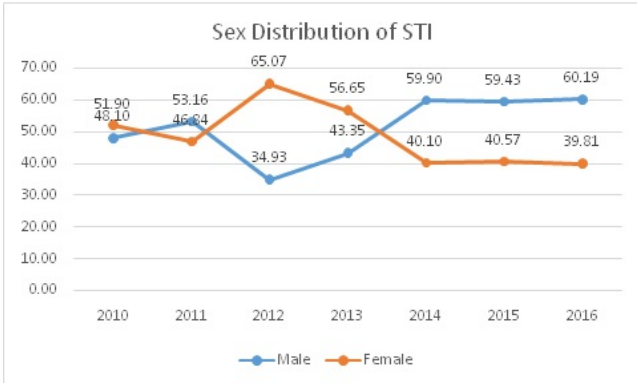

Fig. 2: Sex distribution of STI

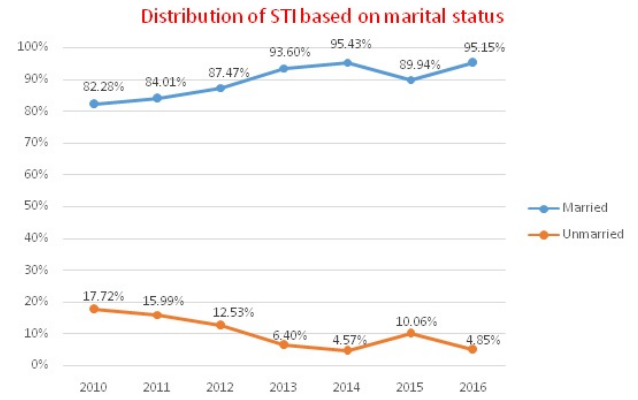

Fig. 3: Distribution of STI based on marital status

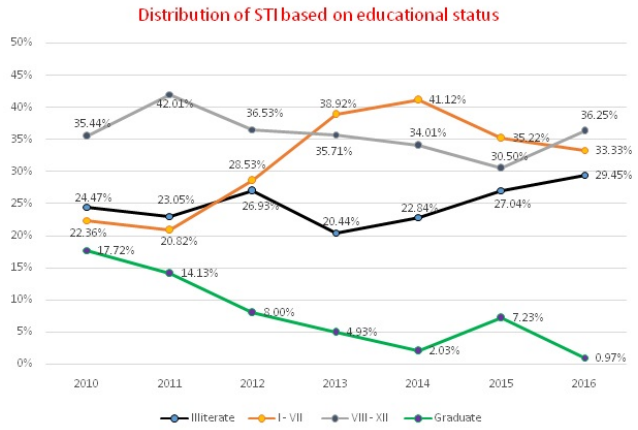

Fig. 4: Distribution of STI based on educational status

(**Figure 1**) **,** in comparison with the study by Kavina et al.[7] However the data support earlier consensus that young adolescents should constitute priority target group in STD control programme.

Males outnumbered the females as shown in Figure 2. Which was in agreement with other studies done by Arakkal et al[2] and Nair et al[13] though there was a marginal difference. However in a study done by Kavina et al[7] ratio was very high (M:F=6.63:1). This could be due to social restrictions and majority of female patients attend gynaecology clinic for treatment.

Prevalence of STDs was more in married than in unmarried people as shown in the figure 3. Which was similar to many other studies[3] who also noticed higher prevalence of STD's among married people, which could be related to the extra marital affairs and multiple sexual partners in males. In contrary, the study conducted by Saikia et al showed an higher incidence of STD's (45.7%) among unmarried people.[6]

There was a gradual increase in the occurrence of new STD cases as shown in Table 2, in contrary to common observation of declining trend of STDs in all government health facilities.[3]

Present study highlights the importance of education and socioeconomic status in the transmission of STDs. Majority of the STD patients were either illiterates or had only

education up to 7th standard and cases significantly reduced among graduates as depicted in the Figure 4, which was similar with the study done by Saikia et al.[6]

Among the occupational groups majority were housewives which constituted 31.93%, followed by agriculturists (28.23%) and cooli (18.52%) as shown (Table 3). Similar observations were noticed in a study done by Kavina et al.[7] Early marriages in females put them at an increased risk of contracting STDs from their male partners who also had multiple exposures outside marriage.

Prevalence of bacterial STDs was decreasing, and those of fungal and viral infections were increasing as shown in Table 1, this was in concordance with other studies done at various centers from India.[5,8,14–19] Declining level of bacterial infections may be due to the increasing sexual health awareness, indiscriminate use of antibiotics and syndromic management of the infections by the physicians.

Viral infections are more commonly seen because of its persistence and recurrences and also may be a result of increased use of broad spectrum antibiotics purchased over the counter.

Among the viral STDs, the commonest was genital herpes followed by genital warts which was comparable with many other studies done at different parts of the country[2,5,8,18,20]

Present study compared with other studies as shown in table 4, pattern of viral infections such as herpes genitalis and genital warts were similar to study done by Jain et al[5] and Kavina et al[7] but different from Saika et al[6] and Chandragupta et al[17] which showed reduced trends. Bacterial infections showed similar pattern as noticed by Saika et al[14] and Chandragupta et al[8] with low incidence of Syphilis and Chancroid, which was in contrary to Jain et al[5] and Kavina et al[7] studies which showed increased number of cases. Only few cases of donovonosis were reported which were comparable with other studies.[5–8] Urethral discharge cases were comparable with the study conducted by Kavina et al[7] however there was a significant number of urethral discharge cases in studies conducted by Jain et al[5] Saika et al[6] and Chandragupta et al.[8]

Overall this study showed a slight declining trend in bacterial STDs and increasing trend of viral and fungal STDs as seen in developing nations which was in accordance of various other studies done at different regions of India.[5,8,14–19] Raising prevalence of genital wart along with herpes genitalis shows the trend similar with that of western countries.[19]

HIV seropositivity in the study population was 7.25% (as shown inTable 2) which was higher than the NACO estimate.[21] This may be attributed to Condom promotion, Partner notification, and partner management and also be a warning for a proper personal sexual education regarding HIV prevention.

5. Conclusion

Majority of the patients belonged to the age group of 21-30 years and the number of STD cases significantly reduced among graduates and were more common among housewives followed by agriculturists.

Bacterial STDs showed a gradual reduction in number while fungal and viral STDs showed increasing trends. Among the bacterial STDs a significant decline in the number of urethral discharge cases was observed during 7 years study period.

6. Source of funding

None.

7. Conflict of interest

None.

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