PATTERN OF SEXUALLY TRANSMITTED DISEASES IN INDIA

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Summary

Based on various published and unpublished records with special reference to the period 1971 to 1977, a spectrum of Sexually Transmitted Diseases (STDs) has been worked out. The average incidence was in syphilis 38.4%, gonorrhoea 19.3%, chancroid 23.3%, L.G.V. 5.1%, donovanosis 1.1%, N.S.U. 4.9% and other STDs 20.0%. Early syphilis was diagnosed more frequently in Armed Forces Clinics while late and latent cases were reported in large numbers in civilian institutions. The average male-female ratios were in syphilis 3.4 : 1, gonorrhoea 8.1 : 1, chancroid 70.3 : 1, L.G.V. 18.7 : 1, donovanosis 4.3 : 1, herpes progenitalis 12.1 : 1, condyloma acuminata 7.3 : 1, N.S.U. 72.5 : 1 and trichomonas vaginitis 1.33 : 5. Sex ratio of afflictions revealed wide variations from State to State.

KEY WORDS : Sexually Transmitted Diseases : Pattern.

Introduction

Sexually Transmitted Diseases (STD) are perhaps the oldest maladies which attracted attention of medical scientists all over the world.

The prevalence of STDs in any community is an index of moral outlook and practice, socio-economic status, presence of efficient machinery for early diagnosis, availability of treatment facilities and mass awareness of preventive measures. The World Health Organisation places STD as third amongst diseases in India, next only to malaria and pulmonary tuberculosis. Reports published in India on the prevalence of STD are generally regional. In this review article, an attempt to project the magnitude of this problem in India based upon the results of a large number of studies undertaken in the civil and military institutions, has been made.

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Pattern of STDs

Studies reviewed here were conducted in different geographical regions and socio-economic groups. Hence a wide variation in the results observed is understandable. The number of STD cases treated at some of the civil and military treatment centres from 1971-1977 is shown in Table I.

Detailed studies on total number of cases treated in various STD centres and proportions of various STD in relation to total cases is shown in Table II, III and IV.

The Institute of Venereology, Madras and the Command Hospital, Western Command, Chandigarh provided the maximum information in respect of other STD as referred in Tables II, III and IV. Details on this group, pertaining to these two centres are given in Table VI. Armed Forces personnel

TABLE 1

Number of STD patients treated at various treatment centres in India (1971-77)

Year	Institute of Venereology Madras * 2	Armed forces Hospitals †	Maulana Azad Medical College, New Delhi ‡ 3
1971	5346	5072	1019
1972	6832	5238	1290
1973	7321	4403	1501
1974	8066	4238	1370
1975	10680	4589	1816
1976	8228	4023	1077
1977	7162	3399	1687
Total	53635	30962	9760

* The figures include both sexes and all age groups (official figures)

† These figures are not official but have been calculated from the monthly returns of central diseases registry in respect of STD cases admitted to various STD treatment centres of Armed Forces Hospitals. The figures include only males, both from Indian Armed Forces and Para Military personnel.

TABLE 2

Pattern of STD cases seen at the Institute of Venereology, Madras (1971-77)

Year	Syphilis all types %	Gonorrhoea all types %	Chancroid %	L. G. V. %	Donovanosis %	N. S. U. %	Other STDs * %	Total %
1971	1605	691	870	330	143	521	1186	5346
	30	12.9	16.3	6.2	2.7	9.7	22.2	100
1972	2077	909	1168	404	212	712	1350	6832
	30.4	13.3	17.1	5.9	3.1	10.4	19.8	100
1973	2216	1070	976	347	179	766	1767	7321
	30.3	14.6	13.3	4.7	2.4	10.5	24.2	100
1974	2570	1042	1100	458	264	602	2035	8066
	31.9	12.9	13.6	5.7	3.2	7.5	25.2	100
1975	3378	1225	1296	554	340	701	3186	10680
	31.6	11.5	12.1	5.2	3.2	6.6	29.8	100
1976	2612	888	1013	380	224	754	2357	8228
	31.7	10.8	12.3	4.6	2.7	9.2	28.7	100
1977	2473	691	942	300	273	649	1834	7162
	34.5	9.6	13.2	4.2	3.8	9.1	25.6	100
Total	16931	6516	7365	2773	1635	4705	13710	53635
	31.5	12.1	13.9	5.1	3.1	8.8	25.5	100

* include Balanoposthitis, Herpes progenitalis, Trichomonas vaginitis, Condyloma acuminata and Fuso spirillosis.

Figures in second lines represent Percentages.

suffering from scabies, whose spouses were having lesions on the genitalia or the surrounding areas alone were included.

Trends in syphilis

Early syphilis was reported more among the Armed Forces and para Military Personnel at Command Hospital, Chandigarh as compared to the civil institutions and vice versa in the case of late and latent syphilis. Congenital syphilis was encountered least. Failure of treatment and serorelapse were observed in 13 (4.8%) and 4 (1.6%)

TABLE 3

Pattern of STD cases at Maulana Azad Medical College & J. P. Hospital, New Delhi (1971–77

Year	Syphilis all types %	Gonorrhoea %	Chancroid %	L. G. V. %	Donovanosis %	N. S. U. %	Other STDs %	Total %
1971 (excluded	313	194	215	20	2	47	228	1010
the month of Jan.)	30.7	19.1	21.0	1.9	—	4.6	22.7	100
1972	353	247	297	18	6	59	310	1290
	27.4	20.9	23.0	1.4	0.5	4.6	24.0	100
1973	383	270	423	35	14	70	306	1501
	25.5	17.9	28.2	2.3	0.9	4.6	20.6	100
1974	374	252	350	21	6	22	345	1370
	28.1	18.2	25.4	1.4	0.4	1.4	25.1	100
1975	510	317	374	34	10	30	541	1816
	28.1	17 5	20.6	1.9	0.6	1.7	29.6	100
1976	312	147	198	36	34	29	321	1077
	28.9	13.7	18.4	3.3	3.2	2.6	28.9	100
1977	473	215	370	67	81	31	450	1687
	28.0	12.8	21.9	3.9	4.8	1.9	26.7	100
Total	2718	1642	2227	231	153	288	2501	9760
	28.4	16.7	22.7	2.3	1.5	2.8	25.6	100

Figures in second lines represent Percentages.

cases respectively at Chandigarh (Table VII).

Sex ratio

The average sex ratio varied in different studies as well as among different diseases. Minimum difference was registered in syphilis and the maximum in cases of chancroid, non-specific urethritis and trichomonal vaginitis (Table VIII).

Discussion

All the five traditional STDs are common throughout India but differ considerably from area to area. This is due to variable socio-economic conditions of geographical regions.

Syphilis

Rajam[4] found 5% prevalence rate of syphilis as on an all-India basis. Tampi[5] on the basis of total Indian population (then 400 million), calculated 20 million people in India as suffering from syphilis. With the Indian population figure having touched 680 million and Indian society having undergone collosal changes, syphilis has assumed a major public health problem. Actually no accurate statistical data for the morbidity caused by syphilis is available in India due to lack of a planned study.

Endemic syphilis is prevalent among the hill folks of Himachal Pradesh, Jaunsar Bawar and Jammu and Kashmir[5-6]. Mitra[7] reported seropositivity ranging from 2.9% to 12.3% from Eastern India. Rangiah[8], Dubey[9] et al and Subash Babu[10] et al observed syphilis in 16.7%, 13.5% and 3.06% respectively. Table V indicated variation in figures in different studies. A conservative estimation of the incidence of syphilis in above 40% out of all STD in India can be accepted on the basis of studies undertaken in the civil and defence services hospitals (Table II–V).

Distribution of syphilis

Early syphilis (primary and secondary) was detected maximum among the Armed Forces and para Military personnel at Command Hospital, Chandigarh as compared to the finding in civil institutions (Table VII). Armed

TABLE 4
Pattern of STD cases among Armed Forces and Para Military Personnel (1971-77)

Year	Syphilis all types	%	Gonorrhoea all types	%	Chancroid	%	L. G. V.	%	N. S. U.	%	Other STDs*	%	Total	%
1971	1107		782		1934		567		180		502		5072	
	21.8		15.4		38.2		11.2		3.5		9.9		100	
1972	1107		785		2006		533		173		634		5238	
	21.1		14.9		38.2		10.1		3.3		12.4		100	
1973	905		634		1789		525		147		403		4403	
	20.5		14.4		40.7		11.8		3.4		9.2		100	
1974	893		581		1762		491		93		418		4238	
	21.2		13.7		41.6		11.5		2.2		9.8		100	
1975	1044		493		1986		551		109		406		4589	
	22.8		10.7		43.8		12.1		2.3		8.8		100	
1976	900		425		1417		470		82		729		4023	
	22.2		10.5		35.5		11.6		2.1		18.1		100	
1977	813		327		1180		461		78		540		3399	
	23.9		9.6		35.4		13.9		2.4		15.8		100	
Total	6769		4027		12074		3598		862		3632		30962	
	21.8		13.2		38.9		11.5		2.8		11.8		100	

* include Donovanosis, Herpes progenitalis, Balanitis and Condyloma acuminata and others.
Figures in second lines represent Percentages.

Forces and para Military Personnel report immediately as compared to their counterparts in the civilian population who go either to quacks or forget to take scientific treatment when there is spontaneous healing of sores or rashes. Rangiah[8] observed early syphilis in 49.6% from 1939 to 1970 at Madras. Latent, late benign and symptomatic syphilis was reported more among the civil population than in the Armed Forces and para Military Personnel (14% and was 31.7% at Madras from 1939 to 1970[8]).

(a) Benign syphilis

Late benign syphilis was detected in 7.7% at Safdarjung hospital at Delhi[11] from 1955-61 but it was only 2.2% in 1973 from the same institution[12]. Rangiah[8] observed this in 2.2% from 1939-70 at Madras and it was 0.9% from the same institution from 1971-77[2]. The decrease is most probably attributed to the awareness of population to the disease as well as of the availability of free anti-syphilitic treatment during the last decade.

(b) Neurosyphilis

Neurosyphilis occurs in about 10% of the persons infected with *Treponema pallidum*[13]. Singh[11] reported neurosyphilis in 92 (4%), Datta and Mitra[14] in 161 (5.8%), Srinivasan[15] et al and Venkobarao[16] et al from 0.93% to 4.06% Bhargava[12] et al in 6.2% and Rangiah[8] in 4.7% of syphilis. Neurosyphilis was diagnosed in 3.6% and 0.7% at the Institute of Venereology and Command Hospital, Chandigarh respectively from 1971 to 1977. These observations suggest that the incidence of neurosyphilis is about 5% in India.

(c) Cardiovascular syphilis

Singh[11] observed cardiovascular syphilis in 60 (2.6%) among all his cases of syphilis. Aortic incompetence was the commonest (50%), followed by simple aortitis (33.3%) and aortic aneurysm (16.7%) at Delhi. After a decade Bhargava[12] et al reported cardiovascular syphilis in 2 (0.2%) from the same hospital at Delhi. It was 1% from 1939-70[8] and 1.2% from 1971-77 at the Institute of Venereology at Madras[2].

TABLE 5

Pattern of STD cases in various STD treatment centres in India

Institutions	Authors	Period of study	Diseases							
			Syphilis all types	Gonorrhoea all types	Chancroid	L.G.V.	Donovanosis	N.S.U.	Other STDs	Total
			%	%	%	%	%	%	%	100%
Safdarjung Hospital	Singh R	1955-61	2300	720	1019	29	10	224	227	4529
New Delhi			50.8	15.0	22.5	0.6	0.2	5.0	5.9	
Medical College	Hajini et al	1966-73	597	251	4	—	—	—	—	852
Srinagar			70.1	29.4	0.5					
Medical College	Sehgal VN	1971-75	149*	Not	300	69	—	Not	150	668
Panaji, Goa	et al		22.3	studied	44.9	10.3		studied	22.5	
Medical College	Dutta AK	1972-73	207	Not	75	18	7	Not	193	500
Calcutta			41.4	studied	15.0	3.6	1.4	studied	38.6	
Safdarjung Hospital	Bhargava NC	1973	413	278	284	23	2	—	—	1000
New Delhi	et al		41.3	27.8	28.4	2.3	0.2			
Institute of Venereology	Personal	1971-77	16931	6516	7365	2773	1635	4705	13710	53635
Madras	Communication		31.5	12.1	13.99	5.1	3.1	8.8	25.5	
M. A. M. College	Personal	1971-77	2718	1642	2227	231	153	288	2501	9760
New Delhi	Communication		28.5	16.8	22.8	2.4	1.6	2.9	25.7	
Armed Forces Hospitals	Author	1971-77	6769	4027	12074	3598	included	862	3632	30962
(India)			21.8	13.1	38.9	11.3	in other STDs	2.8	11.8	
Total			30084	13434	23348	6741	1807	6079	20413	101906
			29.6	13.1	22.9	6.6	1.8	5.9	20.1	
Average %		1955-77	38.4	19.3	23.3	5.1	1.1	4.9	20.0	

* Primary and Secondary syphilis only

Figures in second lines represent Percentages.

TABLE 6

Pattern of other STDs at the Institute of Venereology (IVM) and Command Hospital, Chandigarh (CH)

Diseases	1971		1972		1973		1974		1975		1976		1977	
	IVM No %	CH No %	IVM No %	CH No %	IVM No %	CH No %	IVM No %	CH No %	IVM No %	CH No %	IVM No %	CH No %	IVM No %	CH No %
Balano	270	6	283	10	403	8	348	3	509	3	322	4	366	3
Posthitis	32.5	37.5	31.5	47.6	33.8	38.1	26.3	15.8	30 2	20.0	24.6	14.3	31.2	12.5
Herpes	260	2	218	—	419	—	5.12	2	569	1	419	—	383	—
Progenitalis	31.4	12.5	24.2		35.1		38.7	10.5	33.8	6.7	31.9		32.7	
Genital	238	8	341	11	336	13	417	12	575	6	532	16	396	12
Warts	28.6	50.0	37.9	52.4	28.2	61.9	31.4	63.2	34.2	40.0	40.6	57.1	34.5	50.0
Trichomonal	19	—	14	—	20	—	28	—	10	—	19	—	17	—
vaginitis	2.3		1.6		1.7		2.1		0.6		1.4		1.4	
Fuso spirillosis	43	—	42	—	13	—	20	—	19	—	20	—	4	—
	5.2		4.8		1.1		1.5		1.1		1.5		0.2	
Non-specific	—	—	—	—	—	—	—	2	—	3	—	3	—	1
Epididymitis								10.5		20.0		10.7		4.2
Genital	—	—	—	—	—	—	—	—	—	2	—	5	—	8
Scabies										13.3		17.9		33.3
Total 100%	830	16	898	21	1191	21	1325	19	1682	15	1312	28	1166	24

Figures in second lines represent Percentages.

(d) Congenital syphilis

This was reported variably as 0.5% to 4% (Table VIII). Rangiah[8] quoted this in 0.7% of the cases. Congenital syphilis is hardly seen in the Armed Forces hospitals because the service personnel are not sent on leave till serology ensures non transmission of infection to the spouses.

(e) Failure/Sero-relapse of syphilis

Syphilis cases were followed up regularly for 30 months in the Armed Forces STD Treatment Centres. This is usually not possible in the civil institutions due to loss of contact with patients after completion of treatment. The author came across failure of treatment in 13 (4.8%), and sero-relapse in 4 (1.6%) out of 272 cases (Table VII) at Command Hospital, Chandigarh.

Gonorrhoea

Gonococcal infection is less common than syphilis in India and its reported incidence varies from 12.1% to 29.4% (Table V). Rangiah[8] reported incidence of 7% among the cases at Madras. Singh[17] et al observed an incidence of 5% among service personnel at Pune. Dubey[9] et al and Subash Babu[10] et al reported 4% (policemen) and 1.07% (students) incidence respectively.

Chancroid

Prevalence of chancroid was more among Armed Forces and para Military personnel than among the civil institutions except in studies reported by Vijayalakshmi[18] and Sehgal[19] et al (Table 5). Singh[17] et al encountered chancroid in 52% among Armed Forces patients in a study at Pune. Rangiah[8] reported 9.4% Chancroid prevalence throughout India. The reservoir of infection is mostly prostitutes with poor sense of personal hygiene. Recently Lahiri[20] et al isolated *Haemophilus ducreyi* in 34% of the prostitutes at Agra. Only one had an ulcer while the rest were asymptomatic except for the presence of vaginal discharge.

Lymphogranuloma Venereum (L.G.V.)

Maximum cases were reported from the Armed Force Hospitals and Goa as compared to the other medical institutions. Singh[17] et al and Rangiah[8] observed this disease in 8% and 3.3% of patients respectively. The source of infection is present throughout India. Hajini[6] et al claimed absence

TABLE 7

Distribution of various types of syphilis in India

Stages	Medical College Kashmir Hajini et al 1966—73		Safdarjung Hospital New Delhi Singh R 1955—61		Safdarjung Hospital New Delhi Bhargava et al 1973		Institute of Venereology Madras 1971—77		Command Hospital Chandigarh 1971—77	
	No	%	No	%	No	%	No	%	No	%
Primary	28	4.7	331	14.4	164	39.7	5938	35.1	164	60.4
Secondary	14	2.4	332	14.4	58	14.0	3060	18.1	52	19.2
Latent	549	91.9	1218	52.9	175	42.3	6427	37.9	37	13.3
Late benign	—	—	177	7.7	9	2.2	154	0.9	—	—
Cardio vascular	—	—	60	2.6	2	0.5	174	0.9	—	—
Neurosyphilis	—	—	92	4.0	2	0.5	637	3.7	2	0.7
Congenital	3	0.5	90	4.0	3	0.8	287	1.7	—	—
Miscellaneous	—	—	—	—	—	—	254	1.7*	17	6.4†
Total	597	100	2300	100	913	100	16931	100	272	100

* cases already treated for syphilis now reported with a fresh STD.

† failure of treatment 13 (4.8%), sero-relapse 4 (1.6%).

Figures in second lines represent Percentages.

of L.G.V. in Kashmir valley but some of the patients admitted the source of contact to the author as from Srinagar. (Kapur - unpublished data).

Donovanosis (Granuloma Venereum)

Donovanosis was first described by McLeod[21] at Madras in 1882 as a serpiginous ulcer. Donovan[22] discovered the causative organism in 1905. It used to be a disease of South India, and this was explained on the basis of climatic influence on donovanosis[23]. Reported incidence varied from 0.3% to 6.3% in different studies[24-30]. Rangiah[8] reported incidence of 1.4%. Recently cases from North and East India have been reported[31-34]. No case has so far been reported from Kashmir[6] valley. Singh[17] et al diagnosed donovanosis in 3% among Armed Forces Personnel at Pune. It is possible that factors other than the influence of climate play a contributing role in donovanosis.

Non-gonococcal or Non-specific urethritis

Non-gonococcal urethritis (N.G.U.) and non-specific urethritis (N.S.U.) are synonymous where laboratory facilities are non-existent. The possible aetiological role of *Ureaplasma, Urealyticum, Chlamydia trachomatis, Trichomonas vaginalis* and fungi and other agents have been studied[35-45] with varying results.

N.S.U. is less prevalent as compared to gonorrhoea in India. It was reported maximum for Tamil Nadu State i.e., Institute of Venereology at Madras[2] (Table 5). Similarly L.G.V. was also reported maximum at Madras[2]. Armed Forces STD Treatment Centres had high rate of admission of L.G.V. but the sources of infection was from all over India. L.G.V. and N.S.U. were not reported by Hajini[6] et al from Kashmir valley. It appears that *Chlamydia trachomatis* the causative organismof both the diseases are more prevalent in Tamil Nadu.

In various studies of urethritis in India, Rangiah[8] reported N.G.U. in 3.9%, Ghosh[46] et al in 47%, Nadkarni[47] et al in 11%, Lamba[48] in 15.8%, Mukhija[38] in 26%, Kapur[39] in 50% and Singh[17] et al in 2%. Ratio of gonorrhoea versus N.G.U. or N.S.U. had been found to be 3:1 (Sukhija[49]) and 1:1 (Lamba[48]) among Armed Forces cases. Similar observations were encountered in the civil population by Mukhija[38] (3:1) and Kapur[39] (1:1). Nadkarni[47] et al reported lower prevalence of N.G.U. The over-all proportion was 2.2:1 (Table 5 excluded cases of trichomoniasis).

Trichomoniasis

Many men harbouring *Trichomonas vaginalis* are symptom free and are probably carriers[50,51]. Singh[11] isolated these organisms in 1.2%, Sakia et al[52] in 8.3%, Ayyangar[53] in 2.2%, Mukhija[38] et al in 3% and Sharma[54] et al in 14% of cases of urethritis. The observation varied from 0.6% to 2.3% at Madras during 1971-77. The organism can be found in 12% of all men presenting with urethritis[55].

Chatterjee[56] and Roserio opined that *Trichomonas vaginalis* infestation occurs in females belonging to lower socio-economic group and the organism was isolated in 77.6% cases of leucorrhoea. Similarly Singh[11], Sakia[52] et al and Kapur[57] et al observed *Trichomonas vaginalis* in 3.3%, 54.5% and 2.8% respectively in cases of leucorrhoea. The maximum isolation of 71.7% to 86% was reported at the Institute of Venereology from 1971-77. The parasite is said to be present in 10% to 20% of women in the reproductive years of life and the infestation may be asymptomatic[56].

Balano posthitis, herpes progenitalis, genital warts and scabies.

Non-specific genital ulcers and inguinal bubos still pose diagnostic and

TABLE 8

Sex and STDs Ratios

Diseases	Kashmir Hajini et al 1966—73				Madras Vijayalakshmi 1970				Goa Sehgal et al 1971—75				New Delhi Bhargava et al 1973				IVM * 1971—77				Average Ratio	
	Sex		Ratio		Sex		Ratio		Sex		Ratio		Sex		Ratio		Sex		Ratio			
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Syphilis	287	310	1	1.1	1339	490	2.7	1	131	18	7.3	1	321	92	2.5	1	12174	4757	2.5	1	3.4	1
Gonorrhoea	184	67	2.1	1	703	47	15	1	Not studied		—	—	262	25	10.4	1	5348	1168	4.5	1	8.1	1
Chancroid	4	—	—	—	991	36	27.5	1	292	8	36.5	1	293	3	97.7	1	7220	145	49.7	1	70.3	1
L.G.V.	—	—	—	—	355	8	44.4	1	62	7	8.8	1	22	2	11	1	2534	239	10.6	1	18.7	1
Donovanosis	—	—	—	—	119	33	3.6	1	—	—	—	—	2	—	—	—	1365	270	5	1	4.3	1
Herpes Progenitalis	—	—	—	—	248	35	7.1	1	24	1	24	1	—	—	—	—	2780	539	5.1	1	12.1	1
Condyloma Acuminata	—	—	—	—	240	24	10	1	24	4	6	1	—	—	—	—	2835	476	5.9	1	7.3	1
N.S.U.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4641	64	72.5	1	72.5	1
Trichomonas Vaginitis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	127	4253	1	33.5	1	33.5
Total & Ratio	475	377	1.3	1	3995	673	5.9	1	533	38	14	1	900	122	7.4	1	39024	11911	3.3	1	6.4	1

* Institute of Venereology Madres

therapeutic problems[59]. Very little information is available in the literature published from India about the prevalence of balano posthitis, herpes progenitalis and genital warts (condyloma acuminata), except in annual reports in respect of these diseases available from Command Hospital (WC), Chandigarh and the Institute of Venereology, Madras (Table 6). Balano posthitis was found in 12.5% to 47.6% from both the institutions. Herpes progenitalis appeared to be more common in men (6.7% - 38.7%) than in women (9% - 18.4%) but most of the cases of cervical erosions may be due to herpes infections. Rangiah[8] also observed this in 2.6%. Genital warts were the maximum among the other STD cases reported from Command Hospital(WC),Chandigarh(40%-63.2%). There was gradual increase of reports of genital scabies among Armed Forces Personnel since 1975. This is possibly due to the increased awareness of its recognition as one of the STDs. Most probably non-specific epididymitis was the complication of the non-specific urethritis which could have manifested only as dysuria and thus forgotten by the individuals.

Sex and STD ratios

Sex and STD ratios were variable in these studies. The minimum difference was in syphilis which may be attributable to its being a systemic disease. Leucorrhoea is common among Indian women and that is why trichomonal vaginitis was diagnosed more frequently among them. Women afflicted with chancroid, gonorrhoea and non-gonococcal infections are mostly asymptomatic. Similarly cervical erosions due to herpes progenitalis are not diagnosed as such due to lack of laboratory facilities. The lower prevalence of cases of Condyloma Acuminata (4.5% to 10.7%) among women is unexplainable.

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