IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 6 Ver. XI (June 2016), PP 42-51
www.iosrjournals.org

Revisit profile of Sexually Transmitted Infection (STI) patients

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Abstract:- ***Background:*** *Patients with repeat visits constitute core transmitters with multiple recent sexual partners, repeat STIs, non compliance to usage of condom. Repeat visits could mean treatment failure or an incorrect initial treatment regimen. With limited etiological testing facilities and resources, in developing countries like India, STI control may be most efficiently achieved through targeting screening of core transmitters and through partner treatment.*
Methods: *This is a retrospective study of cases that made repeat visits to STI/RTI clinic for one or more number of times. It is done by analyzing the case records of 62 patients with repeat visits, who attended the out patient wing of the Department of Dermatology, Venereology and Leprosy in tertiary care post graduate teaching hospital in South India.*
Results: *A total of 197 clinic visits were reported of which 62 clinic visits were for index STI/RTI complaint/s and 135clinic visits were repeat visits. Maximum number of revisits is seen in females mostly. Majority have made one repeat visit (60%) followed by 2 revisits (16%) and 3 revisits (8%). In 33-35% of patients, all the symptoms subsided by first repeat visit. The high percentage of laboratory confirmed Trichomoniasis could be due to the use of dark field stop. Treatment failure is seen in 30 patients (48%).* ***Conclusion:*** *Performing speculum examination and taking 3 smears for Grams stain, wet mount, KOH in all cases, in every visit, would detect all laboratory positive cases, in spite of resolution of symptoms. Treatment failure is one of the important causes for multiple revisits in our study.*

Keywords: *Core transmitter, Dark field stop, Revisit, Repeat visit, Return visit, STI/RTI (STI/ Reproductive Tract Infection) clinic.*

I. Introduction

Incidence of STIs is 6% of adult population as per a survey done in 2003, although with regional variations [1], and according to National AIDS Control Organization (NACO). STIs are common in developing countries [2] like India, where they create a major health problem [3]. In the reproductive age group women, STIs rank second for healthy life lost [4]. WHO estimates that nearly 340 million new cases of 4 curable STIs viz., gonorrhoea, chlamydial infection, syphilis, trichomoniasis, occur every year and nearly 75-85% occur in developing countries[5]. Despite recognition of adverse health outcomes and associated financial burden, STI surveillance in resource poor settings remains limited [6].

Females presenting with vaginal syndrome in the initial visit, were more likely to make a revisit to the STI clinic, as this syndrome can be caused by a variety of vaginal infectious agents and is linked with wide differential treatment modalities. This can be expected to be the case, as the sensitivity of organisms causing vaginal discharge in syndromic management algorithms, ranges from 30%-60%, depending on the relative prevalences of bacterial vaginosis, trichomoniasis, gonorrhoea, chlamydia[7-10]

II. Aims and objectives

Our objective was to determine the demographic, behavioral factors, co morbidities, treatment failure associated with repeat STI clinic visits. Repeat visits could be due to follow up visits of index complaint or newly acquired or re acquired STIs. Characterizing the STI patients can provide a baseline to evaluate and enhance prevention and treatment efforts. In addition, understanding factors associated with repeat clinic visits may assist in identifying those at high risk for re infection, as these patients may be core transmitters[11,12,13] Targeting interventions to core transmitters may be a resource efficient way to interrupt STI transmission.[13]

III. Methods

This paper reports the results of a record based retrospective cohort study consisting of clients seen at a tertiary care post graduate teaching hospital of South India, by analyzing pre recorded filled in STI case records of those patients who have come for revisits for one or more number of times. Those patients who made one or more revisit to the STI/RTI clinic (or those who attended the clinic for ≥2 times) are included in the study.

The period of observation was for 28months from 2 Dec 2013 to 9 April 2016. Entry into the cohort began with an initial visit to the STI clinic. The outcome for analysis was any repeat visit to the clinic, defined as a revisit that occurred any time after one week following the first visit. As per NACO, return visits are scheduled after one week for urethral discharge in men, vaginal discharge, genital ulcer-herpetic [14]. Providing comprehensive laboratory services for the etiological diagnosis of STIs has been conceptualized during third National AIDS Control Program (NACP) [15].

A thorough history was taken, including socio demographic features, sexual history. Physical examination including per speculum examination was done in all sexually active females to know if the discharge was from vagina or cervix. Smears were taken for Gram's stain for bacterial vaginosis, gonococcal infection, cervical discharge; wet mount for Trichomonas vaginalis; KOH smear for candida. Tzanck smear was done whenever fluid filled lesions were seen.

Dark field stop (or Dark field central opaque stop or Diaphragm light stop or Spider stop) [16, 17] from Olympus Optical Co. Ltd., Tokyo, Japan, bearing model number CH-2-DS, with a bar code of 2188200 was used, by fitting it over blue filter during light microscopy, to look for Trichomonas vaginalis, which was seen as white moving object with jerky round movements under dark background.

It was observed that identification of Trichomonas was easy and never missed when Dark field stop was used during light microscopy, when compared to that without dark field stop. With dark field stop in a light microscope, 4x, 10x, 40x lenses can be used, but not 100x. To utilize 100xlens in dark background, it is necessary to have Dark field microscope. [16, 17]

A standardized 0-10 scoring system (Nugent's criteria) was used to evaluate bacterial vaginosis on the basis of the presence of large gram positive rods (lactobacilli), small gram negative rods (gardnerella), curved gram negative rods (mobiluncus). A Nugent's score of ≥7 was considered as positive for Bacterial Vaginosis [18]. HIV, VDRL were done in all patients. All the patients were treated in accordance with the NACO guidelines. Privacy was ensured while taking history and during examination.

3.1 Potential risks in the study

There are no potential risks involved in the study.

3.2 Probable benefits of the study

Reduction of revisits by treating core transmitters, which is a resource efficient approach for STI control, is the probable benefit.

3.3 Statistical analysis

Type of study: Retrospective cohort study
Inclusion criteria: Those patients who made one or more revisits to the STI/RTI clinic (or those who attended the clinic for ≥2 times).
Sample size: 62
Sampling method: Non probability sampling method using convenience sampling.
Statistical method used: Descriptive statistics

IV. Results

4.1 Visits and Revisits

A total of 197 clinic visits were reported of which 62 (31%) clinic visits were for index STI/RTI complaint/s and 135clinic visits were repeat visits. Maximum number of revisits is seen in females mostly. Total 25 patients made ≥2 repeat visits to STI clinic, out of whom 22 are females and 3 are males. See Tables 1 & 2.

Table 1: Total number of visits

Type of visit	Number
First clinic visit for index STI/ RTI complaint/s	62
Repeat clinic visit	135
Total no. of visits	197

Table 2: Number of repeat visits (n=62)

Number of revisits	Males		Females		Total	
	Number	No. of revisits	Number	No. of revisits	Number	No. of revisits
1	11	11	26	26	37	37
2	2	4	8	16	10	20
3	1	3	4	12	5	15
4	-	-	3	12	3	12
5	-	-	2	10	2	10
6	-	-	1	6	1	6
7	-	-	2	14	2	14
8	-	-	-	-	-	-
9	-	-	1	9	1	9
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	1	12	1	12
	14	18	48	117	62	135

Females were seen more commonly coming for revisits (48, 77%) than males (14, 23%). Out of all, most have made one revisit (60%) followed by 2 revisits (16%) and 3 revisits (8%). Maximum number of revisits is 12, seen in a Muslim widow, who is allowed to go, all alone, out of the house, only to go to hospital. Hence, socio cultural factors played a role in this case. Though she denied any exposure and was asymptomatic, she used to have positive findings on clinical and /or microbiological examination. Next highest number of revisits is 9, seen in an SLE patient, who is on Mycophenolate mofetil and showed treatment failure for nearly all routine first line and second line drugs during her initial visits. Next highest number of revisits is 7, seen in 2 females. One has mixed infection proven through laboratory investigations and external genital and intravaginal warts. The other one's husband was not willing to use condom, leading to re infections. Most of the women reported that their partners were not willing to use condoms, in spite of repeated requests, thus leading to re infection. All the HIV sero positive patients made only one revisit to the clinic. Gap between revisits ranged from 1week to eight months and 10 days.

4.2 Sociodemographic features

Of the total 62 patients who had come for revisits, 48 (77%) were females and 14 (23%) were males. Male to female ratio was 1: 3.4. Majority of the clients (21 in each group, 34%) belonged equally to groups of 21-30 years and 31-40 years. The median age of male patients was 35 and that for female patients was 25 years, in this study. There are only 2 children (3%) aged 12 and 16 years and both of them are females. In those with ≥2 revisits, of the total 25pts, 3 (12%) are males and 22(88%) are females. See Table 3, 3a.

Table 3: Age and gender (n=62)

Age in Years	Males	Females	Total (%)
10-20	1	4	5(8)
21-30	3	18	21(34)
31-40	6	15	21(34)
41-50	1	8	9(15)
51-60	-	-	-
61-70	1	2	3(5)
71-80	2	1	3(5)
Total	14	48	62(100)

Table 3a: Age and gender in those with □2 revisits (n=25)

Age in years	Males	Females	Total (%)
10-20	-	3	3(12)
21-30	2	10	12(48)
31-40	-	7	7(28)
41-50	-	1	1(4)
51-60	-	-	-
61-70	1	-	1(4)
71-80	-	1	1(4)

Majority have finished high school (21%), followed by graduation (16%), primary school (15%), uneducated (15%). In those with ≥2 revisits, there is an equal distribution of patients among primary school, high school and intermediate groups (20% in each). See Table 4, 4a.

Table 4: Education status (n=62)

Education status	Males	Females	Total (%)
Uneducated	1	8	9(15)
Till 5th class	1	8	9 (15)
Till 7th class	-	8	8 (13)
Till 10th class	4	9	13 (21)
Till 12th class	2	6	8 (13)
Till graduation	4	6	10 (16)
Till post graduation	2	3	5 (8)
Total	14	48	62(100)

Table 4a: Education status in those with 2 revisits (n=25)

Education status	Males	Females	Total (%)
Uneducated	-	-	-
Till 5th class	-	5	5(20)
Till 7thclass	-	4	4(16)
Till 10thclass	1	4	5(20)
Till 12thclass	2	3	5(20)
Till graduation	-	4	4(16)
Till post graduation	-	2	2(8)
Total	3	22	25(100)

Majority are house wives overall (44%) and also in those with ≥2 revisits (40%). See Tables 5 & 5a.

Table 5: Occupation (n=62)

Occupation	Males	Females	Total(%)
Teacher	0	3	3(5)
Police	1	1	2(3)
Clerk	4	2	6(10)
Tailor	1	1	2(3)
Retired employee	1	-	1(2)
Semi skilled worker	-	1	1(2)
Unskilled worker	1	5	6(10)
House wife	-	27	27(44)
Student	1	2	3(5)
Trader	2	4	6(10)
Farmer	3	2	5(8)
Total	14	48	62(100)

Table 5a: Occupation among those with 2 revisits (n=25)

Occupation	Males	Females	Total (%)
Teacher	-	2	2(8)
Clerk	-	2	2(8)
Retired employee	1	-	1(4)
Unskilled worker	2	5	7(28)
House wife	-	10	10(40)
Student	-	2	2(8)
Trader	-	1	1(4)
Total	3	22	25(100)

Out of 62, majority of people (21, 34%) get a family income ranging from 5001INR-10,000INR followed by 10,001INR-15,000INR (20, 32%). See Table 6.

Table 6: Family income (n=62)

Family income	Males	Females	Total (%)
5000	1	9	10(16)
5001-10,000	5	16	21(34)
10,001-15,000	2	18	20(32)
15,001-20,000	3	2	5(8)
20,001-25,000	3	3	6(10)
Total	14	48	62(100)

Out of the total 62 participants, 50 (81%) were married, 7 were widows/widower (11%) and only 3 (5%) were unmarried. Two are living separately (3%). See Table 7.

Table 7: Marital status (n=62)

Marital status	Males	Females	Total (%)
Married	10	40	50(81)
Unmarried	2	1	3(5)
Widow/widower	1	6	7(11)
Living separately	1	1	2(3)
Total	14	48	62(100)

Many females reported that their spouses had pre marital and extra marital exposures and that they were not willing to use condoms. Heterosexual route was the most common mode of contact in our study. Only one 67 year old widower has got homosexual behavior. See Table 8

Table 8: Sexual behavior in STI patients

Sexual Behaviour	Males	Females	Total
Contact with female CSW*	3	-	3
Contact with known person	1	-	1
Use of barrier contraception	-	2	2
Spouse with premarital and extra marital exposures	-	5	5
Homosexual	1	-	1
Husband not willing to use condoms	-	10	10

*CSW –Commercial sex worker

4.3 Complaints

The most common complaint was itching (43%) followed by vaginal discharge (25%) and then dyspareunia (13%). In 33-35% of cases, symptoms subsided by 1st repeat visit. Decrease of symptoms by 1st repeat visit occurred in 10 (13%) females. Persistence of signs in spite of resolution of symptoms is seen in 6 (24%) patients during 1st revisit. These are the same patients who showed treatment failure in spite of resolution of symptoms. See Table 9.

Table 9: Complaints

Complaint*	First visit*	First revisit* No complaints	2nd revisit* No complaints
Itching	40	13	4
Vaginal discharge	23	8	5
Dyspareunia	12	4	2
Ulcer	5	2	
Growth/rash	7		1
Pain	3		
Burning micturition	1		
Pain abdomen after coitus	1		

*- Multiple responses possible. Findings are not mutually exclusive.

The complaint in Cervical Herpes Simplex is nil in 2 cases, when it was found on routine per speculum examination performed during their follow up on 1st revisit. In rest of the patients (5), itching and / or vaginal discharge and / or dyspareunia is/are present. The detection of asymptomatic STIs has always posed problems. These were seen in 5 patients, of which all are males. The partners of the female symptomatic patients were thought as asymptomatic male STI cases.

4.4 Pattern of STIs

Candidiasis and candidiasis with associations is seen in 8 patients each (13%) followed by gonococcus (5, 8%), genital herpes simplex (5, 8%), genital warts (5, 8%), and mixed infection with candidiasis, trichomoniasis and bacterial vaginosis (5, 8%). In males, candidal balanoposthitis was the commonest diagnosis. In females, candidiasis alone and mixed infection with candidiasis, trichomoniasis and bacterial vaginosis are the commonest STIs. The commonest syndrome was vaginal discharge syndrome (50%). See Table 10.

Table 10: Pattern of STIs.

Diagnosis	Males	Females	Number (%)
Candidiasis	3	5	8(13)
Candidiasis with associations*	5	3	8(13)
Trichomoniasis	0	4	4(6)
Genital warts	2	3	5(8)
Genital warts with associations†	0	3	3(5)
MC	0	1	1(2)
MC+BV+C	0	1	1(2)
Gonococcus	1	4	5(8)
GUD-H	2	3	5(8)
GUD-H with associations††	0	4	4(6)
C+T+BV	0	5	5(8)
C+T+BV+NGC (one with vasculitis)	0	2	2(3)
T+BV+NGC(one with pemphigus)	0	2	2(3)
T+BV	0	3	3(5)
T+BV+recurrent UTI+hydronephrosis+cystitis	0	1	1(2)
C+T	0	4	4(6)
C+T+NGC	0	1	1(2)

*Candidiasis with associations:
In men: secondary bacterial infection in 2, LSA in one, trichomoniasis in 2.
In women: LSC in one, LSA in one, LSA with trichomoniasis in one.
†Warts with associations:

1. C+T+BV+NGC+Warts-2 (one has both external genital and intravaginal warts)
2. C+T+BV+Warts-1

††GUD-H with associations:

1. Candidiasis
2. Trichomoniasis
3. C+T+NGC
4. T+BV.

C- Candidiasis, T- Trichomoniasis, BV- Bacterial Vaginosis, GUD-H –Genital ulcer disease herpetic, NGC- Non gonococcal cervicitis, MC- Molluscum contagiosum, LSA - lichen sclerosus et atrophicus, LSC- lichen simplex chronicus, UTI – urinary tract infection.

Gonococcal infection subtypes: Gonococcal cervicitis is seen in 3 women, Gonococcal vulvovaginits is seen in 12year old HIV positive girl, Gonococcal urethritis is seen in 1 male. Out of 9 genital herpes simplex cases, 5 are over cervix solely, 2 are over external genital mucosa solely and 2 are having both external genital mucosal and cervical herpes simplex. Amongst total 8 cases of warts, 5 are over external genitalia, 2 are over external genitalia and intra vaginally together, one was at peri anal area in a 67year old widower who is a homosexual with HIV sero negative status. See Table 10a.

Table10a: Pattern of STIs as per site.

Name of the disease	Number of cases
Gonococcal infection:	5
Gonococcal urethritis	1
Gonococcal cervicitis	3
Gonococcal vulvovaginitis	1
Genital ulcer disease - herpetic:	9
Over external genitalia	2
Over cervix	5
Over external genitalia and cervix	2
Genital warts:	8
Anal wart	1
External genital warts	5
External genital warts and intravaginal warts	2

Out of 6 HIV positive patients, genital herpes simplex alone was seen in 2 cases (33%); trichomoniasis in one case; candidiasis, trichomoniasis, bacterial vaginosis along with cervical herpes simplex and molluscum contagiosum in one case; candidiasis, trichomoniasis, bacterial vaginosis and gonococcal vulvovaginitis in a 12 year old girl; genital warts in one male case.

Removal of warts: Done using trichloroacetic acid in one case, 20% podophyllin resin in 6 cases, electrocautery in one case. One male and one female developed irritant contact dermatitis to podowart, in whom it was discontinued and 5 flrorouracil was used. Removal of Molluscum contagiosum was done using electrocautery.

4.5 Laboratory diagnosis

Amongst laboratory confirmed STIs, 29 (47%) attendees were positive for trichomoniasis, while bacterial vaginosis was corroborated in 18 (29%) patients.

Nugent's scoring is done in 36 participants, out of whom 4 score is seen in 14 patients. Clue cells are seen in all cases from a score of 5 & above and in 9 cases with a score of 4. In those with ≥2 revisits, 4 is the score seen most frequently in 9 cases, out of whom clue cells are seen in 7 cases. See Tables 11, 11a.

Table 11: Nugent's scoring and Clue cells

Nugent's score	Number of patients	Clue cells
2	2	-
3	3	-
4	14	Present in 9 cases
5	4	+
6	3	+
7	4	+
8	6	+

Table 11a: Nugent's score and clue cells in those with 2 revisits

Nugent's score	Number of patients	Clue cells
3	1	-
4	9	Present in 7 cases
5	1	+
6	-	-
7	-	-
8	2	+

4.6 Comorbidities

Systemic lupus erythematosus using oral steroids and mycophenolate mofetil; mixed connective tissue disease using oral steroids; pemphigus using oral steroids and cyclophosphamide; leukocytoclastic vasculitis using oral steroids and colchicine; recurrent urinary tract infections with hydronephrosis and cystitis; rheumatoid arthritis with past history of using methotrexate in one female patient each are present. Also seen were lichen simplex chronicus of vulva with chronic topical steroid use; lichen sclerosus et atrophicus of genitalia in 2 women with chronic topical steroid use; diabetes mellitus mainly in men with candidal balanoposthitis; HIV. Repeated new or re infections can be explained by the usage of long term immunosuppressive drugs in above patients.

4.7 Treatment failure

It is seen in 30 patients totally (48%). The most common drugs, to which treatment failure was seen, were a combination of secnidazole and fluconazole in 16 cases (26%). See Table 12.

Table 12: Treatment failure

Treatment failure	Number
Secnidazole and fluconazole	16
Fluconazole	3
Secnidazole	3
Metronidazole and fluconazole	3
Metronidazole	2
Tinidazole	1
Azithromycin and cefixime	1
Ceftriaxone	1

In those with ≥2 repeat visits (n=25), 6 (24%) showed treatment failure to a combination of secnidazole and fluconazole, one (4%) showed treatment failure to a combination of metronidazole and fluconazole. Candidiasis and trichomoniasis were found to be associated with more treatment failure cases with first line drugs as prescribed by NACO, where as the same is less with bacterial vaginosis.

4.8. HIV positivity

In the present study, 6 out of 62 (9.6%) clinic attendees were seropositive for HIV. Five (83%) are females and one (17%) is a male. A twelve year old girl acquired HIV through sexual abuse by her maternal uncle who was HIV seropostive.

Venereal Disease Research Laboratory (VDRL) testing was done in all patients with clinical suspicion of syphilis out of whom none was found to be reactive.

V. DISCUSSION

5.1 Revisits

Revisits occurring more than 30 days after the initial visit may have occurred due to new STI symptoms, delayed follow up or treatment failure. Women with early follow up were having vaginal discharge at the initial visit more commonly. This is in contrast to E Pultorak et al study [19].

5.2 Sociodemographic features

Average age of males was 35 and that for females was 25 years in this study which is in contrast to 24 years mean age seen in another study [19]. Female and male ratio in this study is 3.4:1 which is similar to some studies [20, 21]. This high female preponderance is highly significant implying that the trend existing few decades back that females were ignoring their reproductive health has been reversed now. It also implies improved health care seeking behaviour in women, owing to increasing female literacy rate. Male preponderance was noted by others [19]. Children in our study constituted 3%which is consistent with 2.8% seen in another study [1]. Having a revisit is not associated with age or gender which is consistent with that in E Pultorak et al study [19].

Majority of patients had completed high school (21%) followed by graduation (16%), primary school (15%) and 15% of patients are uneducated which is in contrast to Saikia L et al study [22].

Majority of patients reported that their spouse has got pre marital and extra marital exposures. Mainly spousal partners were targeted in this study. Similar partner coverage had been reported by Moyo et al [23]. This pattern shows that the most common source of infection for females was their spouse where as pre marital and extra marital exposures were the most common sources for males.

5.3 Complaints

The most common complaint noted was itching followed by vaginal discharge and then dyspareunia. This is in contrast with Chauhan Vet al study [24], where vaginal discharge was the first common symptom. Due to absence of symptoms, a good number of females do not report to the STI clinic. Hence it is important to develop a STI screening program to detect asymptomatic infections in women [25].

5.4 Pattern of STIs

The commonest STI in men in our study was candidal balanoposthitis which is in contrast to urethritis seen commonly in E Pultorak et al study [19]. Vaginal disharge syndrome was the commonest syndrome seen in this study which is similar that of Chauhan V et al study [24]. Incidence of genital warts in our study is low (8%) in contrast to high (17.1%) incidence in Devi SA et al study [1].

5.5 Laboratory diagnosis

Laboratory confirmed Trichomoniasis was found in 29 (47%) attendees in our study in contrast to 13% seen in Choudhry et al study[26], 10% seen in Vishwanath et al study[27], 2.8% seen in Chauhan V et al study[24]. This high percentage could be due to the use of dark field stop [16, 17], which enabled us to easily diagnose and not miss Trichomonas vaginalis.

5.6 HIV positivity

STIs can be the presenting feature of HIV and a small fraction of HIV infections are detected in the STI clinics. HIV positivity in our study was 9.6% which is similar to 9.62% as mentioned in a study by Jaiswal et al [28].

STIs being dynamic, interaction between the pathogens, behavior of individuals and the effectiveness of preventive and control methods decide the clinical profile of various STIs. STIs stand second as the cause of healthy life lost among reproductive age group women, after maternal morbidity and mortality. About 40% of women have STI/RTI at any given point of time as per STI prevalence study done in 2003[1]. An important strategy to prevent HIV transmission and to promote sexual and reproductive health under the NACP and

Reproductive and Child Health Program of the National Rural Health Mission is by provision of STI/RTI care services. Timely diagnosis and treatment of both partners are the important components in the prevention of the spread of STIs.

VI. Conclusion

Health education and promotion of health seeking behavior amongst public are necessary for a sustainable and effective control of STIs. There is a reduced risk of re infection if females attend along with their partners and both get treated and counseled regarding risk reduction, condom usage, thereby preventing the possibility of becoming a core transmitter. First line drugs as prescribed by NACO showed treatment failure in many of our cases, proven by positive laboratory findings in repeat visits, while following Enhanced syndromic case management protocol.

VII. Recommendations

The following are the recommendations derived from our study:

1. To use dark field stop during light microscopy to easily diagnose Trichomonas vaginalis.
2. Training clinicians to regularly perform speculum examination and take smears for laboratory diagnosis, in spite of absence of symptoms, as it is linked with better patient outcome, as indicated by reduced repeat visits in females [19]. This method helps us to detect treatment failure cases effectively.
3. Stressing with clinicians and patients the significance of partner treatment, condom usage, and risk reduction counseling.
4. Regular STI screening in those females who are using long term immunosuppressive drugs due to co morbidities.

Acknowledgements

The authors would like to acknowledge Dr. R. Subba Rao, retired Professor and HOD without whose help this work would not have been made possible, Dr. T. Suryaprakasa Rao, retired Professor, Dr. K. Sushma Choudary, Associate Professor, Mrs. Madhavi Bapatla, lab technician, Mrs. Radha, Mrs. Prasanna, of the department of DVL, NRI Medical College and General Hospital, Chinakakani, Mangalagiri Mandal, Guntur District, A. P., and Dr. Jasmine for helping in execution of the study.

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