

Original Research Article

A study on vaginal discharge in females attending sexually transmitted diseases outpatient department

V. Anandan, V. A. Kayalvizhi*, C. Vijayabhaskar, R. M. Sobimeena

Department of Dermatovenereology, Stanley Medical College, Chennai, Tamil Nadu, India

Received: 06 February 2022

Revised: 09 April 2022

Accepted: 11 April 2022

***Correspondence:**

Dr. V. A. Kayalvizhi,

E-mail: stankayal@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Vaginal discharge is the most common complaint among sexually active women attending sexually transmitted disease (STD) clinics. It can be either physiological or pathological. Effective treatment of vaginal discharge requires etiological diagnosis. The present study was carried out to determine the magnitude, epidemiological correlates and etiologies of vaginal discharge.

Methods: A total of 100 sexually active women in the age group of 20-50 years irrespective of marital status presenting with vaginal discharge were recruited in the study. Women during menstruation, pregnant women, post-menopausal women, women who had taken antibiotics or vaginal medication in the past 2 weeks were excluded. A detailed clinical history, thorough examination, appropriate bedside tests and cultures were done for all cases.

Results: Out of 100 women, 11% had physiological and 89% had pathological discharge. Among pathological vaginal discharge, bacterial vaginosis is the common cause (38%) followed by *Vulvovaginal candidiasis* (20%), *Trichomoniasis* (8%) and cervicitis (10%). Mixed infections were found in 13% with bacterial Vaginosis and *Vulvovaginal candidiasis* being higher. The 4% were HIV serology positive.

Conclusions: The results of the study were comparable with other similar studies. It emphasizes the fact that clinicians should be aware of emerging epidemiological patterns, different presentations of vaginal discharge, recent advances in investigation and their management.

Keywords: Vaginal discharge, *Bacterial vaginosis*, *Vulvovaginal candidiasis*, Wet mount, KOH mount, Sabourad dextrose agar

INTRODUCTION

Vaginal discharge is the most common complaint among sexually active women attending STD clinics (primary care, gynecology, family planning, and venereology). It may be either physiological or pathological. It is intricate to know what proportion of discharges belong to either category. The vagina, ectocervix and endocervix are predisposed to various pathogens. The stratified squamous epithelium of the vagina and ectocervix are

susceptible to infection with *Candida* species and *Trichomonas vaginalis*. The columnar epithelium of the endocervix is liable to infection with *Neisseria gonorrhoea* and *Chlamydia trachomatis*. The common infectious causes of vaginitis are bacterial Vaginosis, *Vulvovaginal candidiasis* and *Trichomoniasis*.⁸ The uncommon infectious causes include foreign body with secondary infection, atrophic vaginitis with secondary bacterial infection, and idiopathic vulvovaginal ulceration associated with human immunodeficiency virus (HIV).¹⁵

Identifying the infectious source of vaginal discharge is essential because a large number of pathogens causing vaginal and cervical infection often coexist. Patient's history and clinical examination along with appropriate laboratory tests aids in appropriate diagnosis. Effective treatment of vaginal discharge requires the etiological diagnosis to be established and identifying the same offers a precious input to syndromic management and provides an additional strategy for HIV prevention. The present study was undertaken to assess the magnitude of abnormal vaginal discharge, its epidemiological correlates, proposed etiologies, bedside tests and specialized culture techniques for confirming the diagnosis and treatment seeking behavior among sexually active women attending tertiary care hospital in Chennai.

METHODS

The study was a prospective observational study with 100 patients between June 2015-December 2015 in the department of STD, government Stanley medical college. Ethical committee approval obtained from institutional ethical committee. The inclusion criteria included age 20-50 years, irrespective of marital status, sexually active women, non-pregnant women and females consulting for vaginal discharge. Women during menstrual cycle, pregnant women, post-menopausal women, women who had taken antibiotic or vaginal medications in last 2 weeks and Women not willing to participate in study were excluded from the study. The Institute ethical committee clearance was obtained and informed consent was taken from the women included in study group. A detailed history and examination were done followed by basic bedside investigations and culture. Specimen from speculum was immediately subjected for wet mount examination using normal saline for the presence of clue cells and motile *Trichomonads* and for KOH mount and whiff test; KOH to identify budding yeast cells and pseudo hyphae. Five swabs were used to collect the specimen from each patient, three from vagina and two from cervix. pH paper was utilized for pH determination. First swab was subjected to Gram stain and the presence of clue cells and pseudo hyphae with spores looked for. Nugents scoring was done in case of bacterial vaginosis. The second vaginal swab was streaked in Sabourad's dextrose agar and sent microbiology laboratory. For differentiation of *C. albicans* and *C. non albicans*, germ tube formation was noted. Third swab was inoculated in CPLM for *Trichomonas* culture. The ectocervix is wiped clean with a large swab then two endocervical swabs were taken. First cervical swab was subjected to Gram staining, presence of gram negative diplococcic noted. Second cervical swab was streaked in Z pattern in modified Thayer Martin medium and Chocolate agar placed in Macintosh jar and sent to micro lab for *Gonococci* culture. Blood samples were collected for HIV antibody testing and RPR. The collected data is analysed using paired t test. The first table gives the list of cultures sent.

Table 1: Swabs for culture.

| Specimen | Culture media | Organisms |
|----------------------|--|--------------------|
| Endo cervical | Modified Thayer Martin chocolate agar | <i>Gonococci</i> |
| High vaginal | CPLM | <i>Trichomonas</i> |
| High vaginal | Sabourad's dextrose agar | <i>Candida</i> |

RESULTS

This study included 100 sexually active women with vaginal discharge attending STD OPD. The most common age group noted in our study was 31 to 40 years. Majority (42%) of them had primary education and 36% were illiterate. Nearly half of them (49%) were from semi urban background and 32% were from urban background. In our study 34% were female sex workers followed by housewives (Figure 1). Majority (83%) of them were married and living with husband, 8% unmarried and 9% were separated or widow. The 61% of female had single partner while the others gave a history of multiple partners. Regarding usage of different methods of contraception, 22% women were tubectomised, 32% women had barrier contraception, more than two third (40%) were non users. The group who used barrier contraception was mostly FSWs (Figure 2).

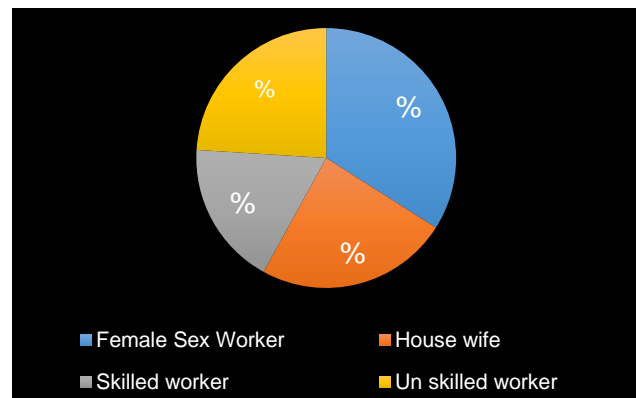


Figure 1: Occupation of females with vaginal discharge.

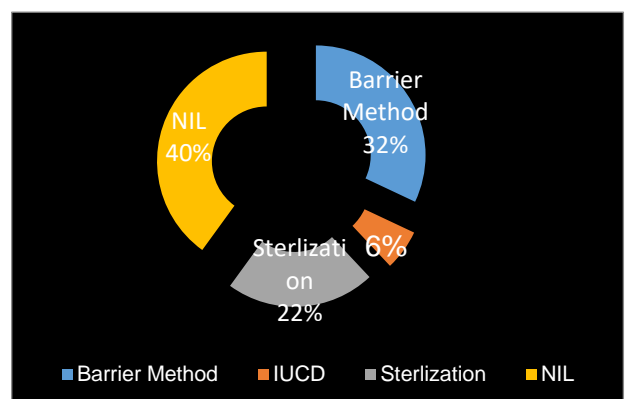


Figure 2: Contraceptive usage.

There was no previous history of venereal disease in 70% of the individuals. About 12% had recurrences. Nine females gave history of pelvic inflammatory disease. This study recorded normal physiological vaginal discharge in 11% and abnormal vaginal discharge in 89%. Among abnormal vaginal discharge, the diagnosis of bacterial vaginosis (38%), vulvovaginal candidiasis (20%), trichomoniasis (8%) and cervicitis (10%) were made based on complaints and investigation. Thirteen females had mixed infections (Figure 3). The most common association reported with VVC in present study was diabetes (43%).

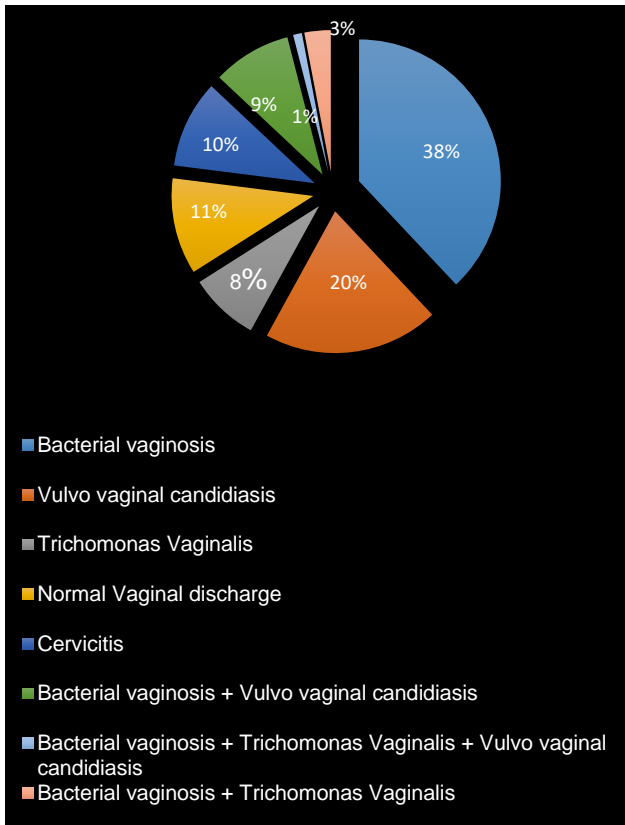


Figure 3: Etiological diagnosis.

Most common complaint noted in our study was foul smelling discharge (39%). Maximum number of patients with BV had a complaint of foul-smelling discharge (30%). Two of BV had curdy white discharge. The most common discharge colour noted was white (43%) and it was profuse, homogenous discharge. The pH of 5 was recorded in 53% of BV and TV. About 39% were whiff test positive. Among which 4% were TV. Amsel criteria were positive in 51%. The present study noted 37% clue cells in wet mount and 41% clue cells in Gram stain (Figure 4). In regards to vulvovaginal candidiasis, all cases of VVC had either itching or curdy discharge. Among them 23% were both KOH (Figure 4) and culture positive. KOH negative but culture positive was seen in 7%. Out of 29% culture positive in Sabourad dextrose agar (Figure 4), non albicans (16%) predominate followed by *C. albicans* 13%. In case of trichomoniasis,

about 6% were both wet mount and culture positive, 4% were only culture positive and 1% were only wet mount positive. None of the cases were positive for Gram negative intracellular diplococci. *Gonococci* culture was negative in all cases.

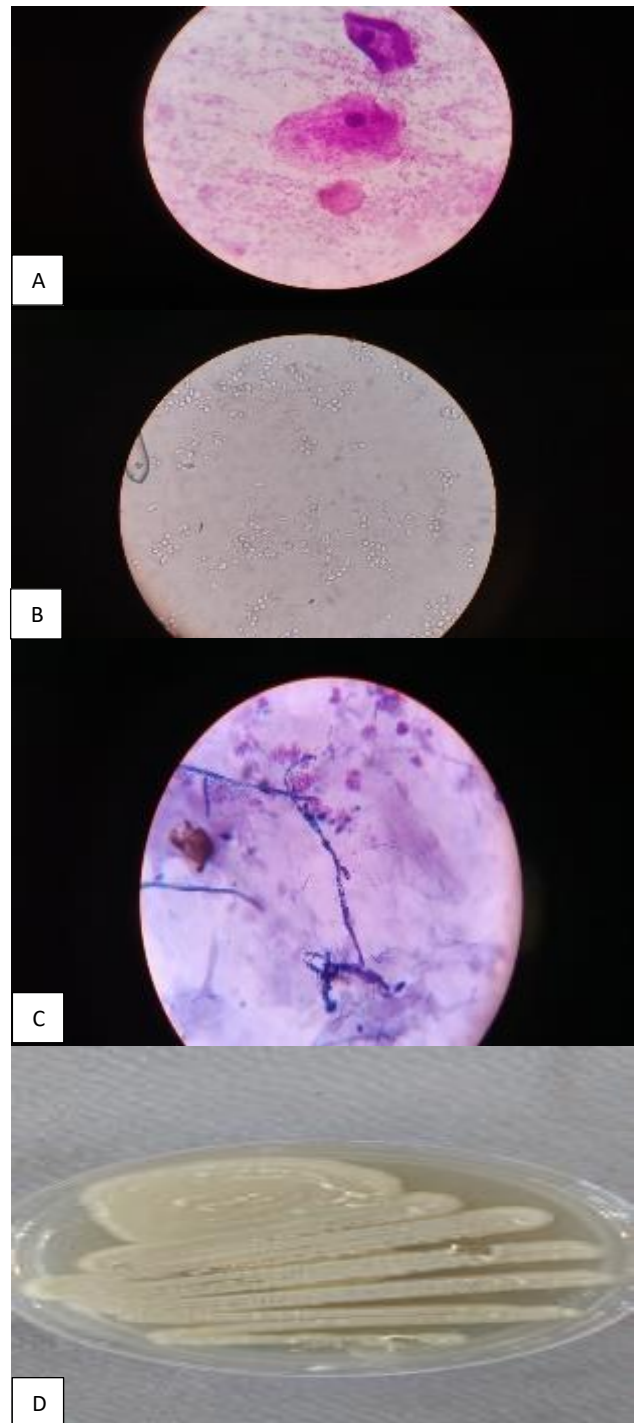


Figure 4: (A) Clue cells; (B) candidal spores in KOH mount; (C) budding yeast cells with pseudohyphae in Gram stain; and (D) SDA showing candida growth.

Our study reported mixed infections in 13%. Bacterial vaginosis with vulvovaginal candidiasis found to be higher followed by bacterial vaginosis with trichomonas

vaginalis. The triple infection was found in 1% case. The study found out cervicitis in 10%. Table 2 compares the symptoms with investigation and Table 3 compares positivity of culture in relation to bedside investigations. In our study incidence of STIs was higher in women with single partner than FSW. HIV serology was positive in 4%, of which 2% had BV, 1% had TV and 1% had VVC.

Table 2: Comparison of investigation with symptoms.

| Examination | Present | Absent | Total |
|------------------------------------|---------|--------|-------|
| Bacterial vaginosis | | | |
| Excessive/ foul smelling discharge | 43 | 8 | 51 |
| PH>5 | 48 | 3 | 51 |
| Wet mount | 38 | 13 | 51 |
| Whiff test | 35 | 16 | 51 |
| Gram stain | 41 | 10 | 51 |
| Vulvovaginal candidiasis | | | |
| Itching/curdy discharge | 26 | 4 | 30 |
| PH<4.5 | 23 | 7 | 30 |
| Koh | 24 | 6 | 30 |
| Culture | 29 | 1 | 30 |
| Trichomoniasis | | | |
| Excessive/ frothy discharge | 9 | 3 | 12 |
| Wet mount | 7 | 5 | 12 |
| Culture | 11 | 1 | 12 |

Table 3: Comparison of Bedsibe investigation with culture.

| Description | N | Total |
|----------------------------------|----|-------|
| Candidiasis | | |
| KOH +ve but candida culture -ve | 1 | |
| Candida culture +ve but KOH -ve | 7 | |
| Both candida culture and KOH +ve | 23 | 30 |
| Trichomoniasis | | |
| Wet mount +ve, but TC -ve | 2 | |
| TC +ve but wet mount -ve | 4 | 12 |
| Both TC and wet mount +ve | 6 | |

DISCUSSION

A total of 100 sexually active women presenting with vaginal discharge to the STD OPD were recruited in our study. More than half (52%) of them were in the age group 31 to 40 years. This is contrast to Kataria et al and Patel et al which showed most common age group was 20 to 30 years.^{1,2} Majority (42%) of them had primary education and 36% were illiterate. It appeared that less educated patients had less hygienic practices thus increased risk of acquiring illness. This was consistent with the study by Kataria et al.¹

The present study noted abnormal vaginal discharge more among married women (83%). This is in consonance with

Kataria et al and contrast with Patel et al which find higher percentage of unmarried female. This may be because unmarried female reported less to the hospital, as our study was confined to the hospital.^{1,2}

A history of premarital or extramarital contact was present in 31%. This history is a sensitive issue and good outcome is essentially dependent on developing better doctor patient relationship. Out of the 92 women (excluding unmarried women), 53% women denied the history of husband having extramarital contact while 17% women gave a positive response. However, 22% women were not aware of their husband's extramarital status. This was in consonance with Sivaranjani et al.³

Regarding usage of different methods of contraception, 22% women were tubectomised, 32% women had barrier contraception, more than two third (40%) were non users; this was similar to Rahman et al.⁴ This implies that acceptance and sustained use of family planning methods were still low and measures to be taken to create awareness of contraceptive usage. This may also be the reason for slight increased incidence of STI in monogamous females, as they could have acquired the infection from the bridge population.

About 5% of normal physiological discharge had stated excessive discharge, which on further investigations found to be normal and assurance was given regarding the normal physiological discharge.

Most common complaint noted in our study was foul smelling discharge (39%). The most common discharge colour noted was white (43%) followed by green (36%). This was in consistent with Patel et al.²

Out of 29% culture positive in Sabourad dextrose Agar, non albicans (16%) predominated followed by *C. albicans* 13%. This is in disagreement with Mohapatra et al and Maitri Shah et al, were *C. albicans* were prevalent. This study signifies the changing trend of etiology, requiring modifications in routine treatment of azoles in VVC, as non albicans group are resistant to azoles and they respond well to flucytosine and boric acid.^{5,6}

Gonococci culture was negative in all cases. This was contrast to the study by Kataria et al (2%), Yusuf et al (1.2%), Pury et al (3%), Alary et al (5.1%) and Fonck et al (7%) where *Gonococci* had been cultured. The reason of this may be the study group; the earlier studies were performed in sex workers, whereas present study covered both sex workers and women attended our OPD.^{1,7-10}

This study recorded normal physiological vaginal discharge of 11% and abnormal vaginal discharge in 89% this was in consistent with Sivaranjani et al (18%) The study showed a maximum incidence of Bacterial vaginosis (38%).³ This was in agreement with Fox et al, Puri et al and Fonck et al.^{8,10,11} The incidence had compared favorably to that of Ries et al (30.35%),

Mahadani et al (44.30%) Kamara et al (44.10%) whereas Begum et al, Yusuf et al, Koumans et al found BV to be second most common which is dissimilar with the present study.¹²⁻¹⁷

The second most common infection found was vulvovaginal candidiasis (20%) Puri et al, Kataria et al, Ries et al and Kamara et al found a similar result in their study.^{1,12,14,18} Whereas Nessa et al, Nawadih et al, Sobel et al reported a higher incidence of VVC which were not consistent with our study.¹⁷⁻¹⁹

Our study found Trichomoniasis in 8%. Rahman et al, Alam et al, Plitt et al, Peer et al and Adad et al reported a similar result.²⁰⁻²²

Our study reported mixed infections in 13%, which was consistent with study by Sivaranjani et al.³ Bacterial vaginosis with vulvovaginal candidiasis found to be higher followed by bacterial vaginosis with trichomonas vaginalis. The triple infection was found in 1% case. The study found out cervicitis in 10%. This was disagreement with Rahman et al which showed cervicitis prevalence of 48% HIV serology was positive in 4%, of which 2% had BV, 1% had TV and 1% had VVC.²² These cases pose a higher risk to their sexual partners because they have increased shedding of HIV and favors transmission to their partner. More emphasis should be laid upon these cases, ensuring a complete cure from these infections as they already suffer from immunocompromised status. These patients need an extended course of treatment when compared to HIV seronegative patients and are more prone for recurrent infections. Appropriate counseling is mandatory for their sexual partners too. None of the group was RPR reactive.

CONCLUSION

It is evident from the study that a significant proportion of general public is suffering from abnormal vaginal discharge. Bacterial vaginosis, vulvovaginal candidiasis and trichomoniasis are the principal causes for the abnormal vaginal discharge. The present study cautions the clinicians to be aware of emerging epidemiological data, the different presentations of vaginal discharge, and the approach to their management so that the symptoms can be treated based on their etiology. This study has highlighted the prevalence of mixed infections in a single individual and one should be meticulous in picking up those with mixed infections. It also highlights the importance of culture over bedside investigations in coming to a microbiological diagnosis. This study signifies the changing trend of albicans to non albicans in VVC, requiring modifications in routine treatment of azoles to flucytosine and boric acid as non albicans respond well to them. The unidentified presence of HIV infection in the general population poses potential risk for infection, spread and mutation of these organisms in immunocompromised states. A periodic study and review of this type will help the epidemiologist to identify the

prevalence pattern of infections and to manage them efficiently to overcome the emergence of resistant organisms. In the era of genome biology, it is a definite possibility of developing a single test which will identify most of the causative organism. More research is needed for such test that reduces the laboratory time and produces rapid results. It is concluded that every patient, who complains of vaginal discharge, should be thoroughly interrogated, examined and investigated properly and pathological discharge should be treated completely.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Kataria U, Siwach S, Chhillar D. Study of vaginal discharge among sexually active females in age group of 20-45 years: A hospital-based study in B.P.S Government Medical College for Women, Khanpur Kalan, District Sonapat, Haryana, India. *IAIM.* 2015;2(4):1-4.
2. Patel V, Pednekar S, Weiss H, Rodrigues M, Barros P, Nayak B et al. Why do women complain of vaginal discharge? A population survey of infectious and psychosocial risk factors in a South Asian community. *Int J Epidemiol.* 2005;34(4):853-62.
3. Sivaranjini R, Jaisankar TJ, Thappa DM, Kumari R, Chandrasekhar L, Malathi M et al. Spectrum of vaginal discharge in a tertiary care setting. *Trop Parasitol.* 2013;3:135-9.
4. Rahman M, Alam A, Khairun N, Aanowar H, Shamsun N, Dilip D et al. Etiology of Sexually Transmitted Infections among Street-Based Female Sex Workers in Dhaka, Bangladesh. *J Clin Microbiol.* 2000;1244-6.
5. Mohapatra S, Panda P, Parida B. Genital tract infection of women in Southern Orissa with special reference to pelvic inflammatory disease. *Indian J Sex Transm Dis.* 2013;34(1):64-6.
6. Chauhan V, Maitri S, Sejal T, Sangita VP, Yogesh M. Sexually transmitted infections in women: A correlation of clinical and laboratory diagnosis in cases of vaginal discharge syndrome. *Indian Dermatol Online J.* 2014;5(1):S1-5.
7. Abdullah YM, Chowdhury M, Shahidul IKM, Eva EO, Sharif AR, Rahman MK et al. Common microbial etiology of abnormal vaginal discharge among sexually active women in Dhaka, Bangladesh. *South East Asia J Public Health.* 2011;1:35-9.
8. Puri KJ, Madan A, Bajaj K. Incidence of various causes of vaginal discharge among sexually active females in age group 20-40 years. *Indian J Dermatol Venereol Leprol.* 2003;69(2):122-5.
9. Fonck K, Kidula N, Jaoko W, Estambale B, Claeys P, Ndinya-Achola J et al. Validity of the vaginal discharge algorithm among pregnant and non-

- pregnant women in Nairobi, Kenya. *Sex Transm Infect.* 2000;76(1):33-8.
10. Fox KK, Behets FM. Vaginal discharge. How to pinpoint the cause. *Postgrad Med.* 1995;98(3):87-90.
 11. Ries AJ. Treatment of vaginal infections: candidiasis, bacterial vaginosis, and trichomoniasis. *J Am Pharm Assoc (Wash).* 1997;NS37(5):563-9.
 12. Mahadani JW, Dekate RR, Shrikhande AV. Cytodiagnosis of discharge per vaginum. *Indian J Pathol Microbiol.* 1998;41(4):403-11.
 13. Nessa K, Waris SA, Alam A, Huq M, Nahar S, Chawdhury FA et al. Sexually transmitted infections among brothel-based sex workers in Bangladesh: high prevalence of asymptomatic infection. *Sex Transm Dis.* 2005;32(1):13-9.
 14. Sobel JD, Faro S, Force RW, Foxman B, Ledger WJ, Nyirjesy PR et al. Vulvovaginal candidiasis: epidemiologic, diagnostic, and therapeutic considerations. *Am J Obstet Gynecol.* 1998;178(2):203-11.
 15. Sim M, Logan S, Hoon Goh L. Vaginal discharge: evaluation and management in primary care. *Singapore Med J.* 2020;61(6):297-301.

Cite this article as: Anandan V, Kayalvizhi VA, Vijayabhaskar C, Sobimeena RM. A study on vaginal discharge in females attending sexually transmitted diseases outpatient department. *Int J Res Dermatol* 2022;8:314-9.