

## Prevalence of Vaginitis (Iltehab-E-Mehbal)

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### Abstract

**Background and Objectives:** Vaginitis is probably the most common infection among all gynecological infections effecting half of all women. It is escalating worldwide and complicates the diagnosis. Several risk factors have been associated with prevalence of vaginitis.

- The aim of the study is to measure the prevalence of Vaginitis, various types of vaginitis and identify the risk factors.
- The objectives of the study are to create community awareness on Vaginitis and to train the patient about the preventive measures related to vaginal infection and genital hygiene to inhibit the recurrent episodes and chronicity of the disease

**Material and Method:** A cross-sectional study was conducted to compare the prevalence and associated among different types of vaginitis and risk factors in reproductive aged woman visiting NIZAMIA GENERAL HOSPITAL, HYDERABAD, Telangana. for complaints of vaginal discharge. Data on risk factors was collected through self designed structure questionnaire. Diagnosis based on Amsels criteria and vaginal swabs were examined using microbiological technics. Data were analyzed using different tests of descriptive statistics.

**Result:** The Prevalence of vaginitis among 214 patients was 9.16%. Out of which 110(51.4%) bacterial vaginosis (BV), 8(3.7%) Trichomoniasis (TV), 96(44.9%) Vulvovaginal candidiasis (VVC) respectively. Major pathogens included Escherichia coli, gardnerella vaginalis, trichomonas vaginalis and candida albicans. Overall, 51.4% patients had BV. BV and VVC were associated with history of miscarriage, low socio-economic conditions diabetes, and BV is the predominant cause of vaginitis.

**Conclusion:** The data obtained suggest that the prevalence rate of Bacterial vaginosis is relatively high, candida albicans was the most common fungal species causing VVC and trichomonas vaginalis prevalence was underestimated using wet mounts. It could be affected by hygiene behavior and certain sociodemographic characteristics which indicate the need for comprehensive, scheduled of health care education.

**Keywords:** Cross sectional study; Bacterial vaginosis; Trichomoniasis; Vulvovaginal candidiasis; Prevalence and risk factors

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## 1. Introduction

### 1.1. Prevalence of vaginitis (ILTEHAB-E-MEHBAL)

In woman, there is an increasing global burden on lower genital tract Infections in reproductive age group. Vaginitis is characterized by symptoms of abnormal vaginal discharge, malodor, itching and burning of the vulva [1]. Vaginitis is characterized by the replacement of normal Lactobacilli dominated flora with a mixed flora frequently containing *Gardnerella vaginalis* and various anaerobic bacteria.

Epidemiological data has demonstrated that the prevalence of various reproductive tract infections varies between countries and even between regions within a country. This implies that difference in the characteristics of each pathogen, biological, behavioral, medical and socioeconomic factors. Incidence of vaginitis is 29% worldwide, In India 10 million cases per year. It occurs in 1-14% all women of reproductive age thought the world and its prevalence in India is estimated to be 30%. Most common types of vaginitis incidence are bacterial vaginosis (BV 40-45%), Vulvovaginal candidiasis (VVC 20-25%), Trichomoniasis (T 15- 20%).

Discharge flows from the vagina daily as the body's way of maintaining a normal healthy environment. Normal discharge is usually clear or milky with no malodor. A change in the amount, colour, or smell, irritation, or itching or burning could be due to an imbalance of healthy bacteria in the vagina, leading to vaginitis. They are commonly 4 types including bacterial Vaginosis (BV), Vulvo-vaginal candidiasis (VVC) Trichomoniasis (T) and Atrophic vaginitis (AV).

The vagina and its unique micro-flora from the balanced ecosystem with vaginal environment presence of microbes and the micro-flora in term of controlling the vaginal PH. It may be symptomizing by Poor menstrual hygiene, Malnutrition, Low socioeconomical status Chronic constipation, Multiparous women, Use of IUCDS, Douching, Certain soaps and sprays, Antibiotics, Pessaries, diabetes, Pregnancy and Some infections can disturb the balance of a healthy vagina. In some patients developing UTI, when uropathogens almost away from the fecal flora colonize the vagina that raised vaginal PH because of the reduction in number of lactobacilli which produce lactate and hydrogen-peroxide may predisposing to Genito-urinary infections.<sup>27,28,29</sup>

Some of the consequences of the infections are PID, Abortion, Preterm deliveries and HIV These infections are mostly asymptomatic but can lead to serious complications in their reproductive outcome it left untreated it may progress the disease.

- In reproductive period BV is most prevalent it may be affected by overgrowth of vaginal bacterial flora anaerobes, *Gardnerella vaginalis* formerly named *haemophilus vaginalis*. There is a considerable decrease in the number of lactobacilli in the vaginal discharge with 100-fold increase in growth of other anaerobic bacteria. Discharge associated with minimal inflammatory response, the vaginal fluid reveals few *leukocytes*.<sup>31,27</sup> other organisms are *Mobiluneus spp*, *Anaerobic gram -ve rods*, *Prevotella spp*, *pophyromonas spp*, *Bacteroides spp*, *pophyromonas spp*, *pepto streptococcus spp*.
- Symptoms are Persistent foul smell, Yellow greenish-gray vaginal discharge and Dyspareunia. Signs are Tender, red and moist vagina.<sup>31</sup>
- *Trichomonas vaginalis* is a protozoan organism that causes Trichomoniasis, this organism is predominantly transmitted by sexual contact. TV characteristics are Sudden profuse and offensive vaginal discharge, Irritation and itching of vagina and urinary symptoms are dysuria and frequency of micturition. Signs are Vaginal discharge is thin, greenish-yellow, frothy and offensive. The vulva is inflamed with evidence of pruritus. The vaginal walls become red and inflamed with multiple puerperal hemorrhagic spots. (Strawberry appearance)
- VVC is caused by *candida albicans*, a gram +ve yeast like fungus. Which is characterized by Profuse vaginal discharge – thick curdy white, Intense vulval itching (pruritus vulvae), Soreness and pain in vaginal introits.
- Signs including Redness of the entire vaginal and vulval mucous membrane. and Adherent curdy flakes may be seen on the vaginal wall.

Literature is available about prevalence and association of BV, TV and VVC with various risk factors. However, there is scarcity of information about AV and its associated risk factors. Therefore, an effort was made to compare the prevalence of different types of vaginitis and to assess the relationship between different types of vaginitis and predisposing factors among reproductive aged women with complaints of vaginal discharge attending NIZAMIA GENERAL HOSPITAL HYDERABAD TELANGANA.

- According to unani physician this disease is caused by dominance of Qilt E BALGHAM, SAFRA, SAUDA.<sup>13</sup>
- The basic concept of “AL UMOOR-AL-TABIYA” any disturbance of any one of its even principles causes Disease.<sup>7</sup>
- Balgham, Safra and Sauda will be elevated in blood which cause Inflammation.<sup>13</sup>
- In classical unani literature ILTEHAB-E-MEHBAL has been described as inflammation of the vulva and vagina under the disease named warm-e-reham.<sup>8</sup>
- According to kabiruddin the vaginal discharge temperament may be damavi, balghami, safravi, saudavi or infective material above the humors anyone of it occur.<sup>12</sup>
- According to AJMAL KHAN causes of warm-e-farj are general weakness Leucorrhoea, Labor, dysuria, diabetes, syphilis and improper hygiene.<sup>8</sup>

According to Akseer-e-azam Excessive leucorrhoea, miscarriage and cervicitis are most common cause of vaginal inflammation.<sup>6</sup>

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## 2. Material and methods

### 2.1. Study design and ethical consideration

It is a cross-sectional study undertaken to assess and evaluate the prevalence and risk factors of vaginitis in reproductive age.

Before commencing the study, research protocol (synopsis) was submitted to Institutional ethical committee of government Nizamia Tibbi, College, Charminar Hyderabad. The study was started after ethical clearance.

### 2.2. Inclusion criteria and exclusion criteria

Participants with clinical symptoms of vaginitis, Age group: 18-40 years, Patients willing to take part in study were included in the study. Patients who are not giving informed consent, Patient's with malignancies, Patients not attending GNGH were excluded.

### 2.3. Data collection

Patients who fulfil inclusion criteria were selected in the study by history taking and Clinical examination with the help of self-designed structured questionnaire.

The sample size was estimated to be 214, considering the time limit for completion of dissertation work.

### 2.4. Data analysis

Data was analyzed by using Zhuhai Kingsoft office software manual methods, Graphs and tables were reproduced by using WPS OFFICE.: The collected data and results were evaluated and presented in the form of tables and graphs in accordance to the purpose of the study. It was a prevalence study and direct comparison with previous studies was made.

This study was conducted in patients of reproductive age group females attending the gynecological department of NIZAMIA general hospital Charminar Hyderabad Telangana from September 2022 till February 2023. A total of 214 consecutive women with complaints of change in colour and odor of vaginal discharge, pain during intercourse, were considered for the study. Questionnaire were used to know about their general health history, educational level and possible risk factors for Vaginitis. Vaginitis was diagnosed based on Amsels criteria and the smear of cervical and urethral discharge.

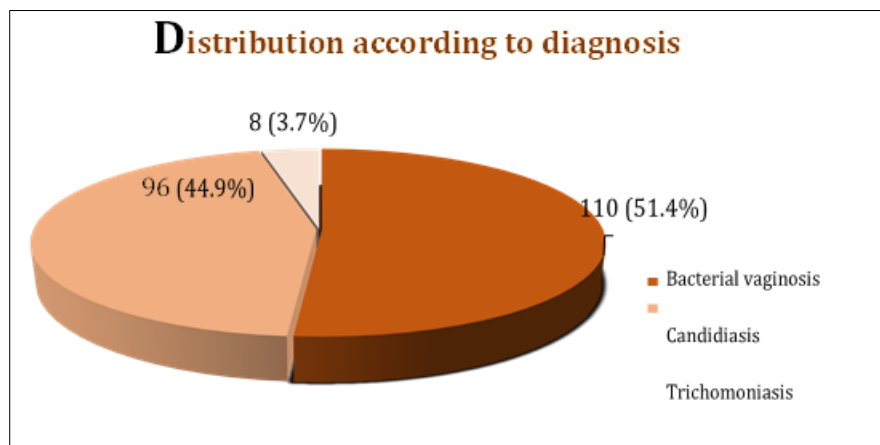
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## 3. Results

The present study of 214 patients who fulfilled inclusion criteria where enrolled to estimate the prevalence. Age of the participants ranged from 18-40 years (Mean 32.0+6.2) among 214 participants 110(51.4%) had bacterial vaginosis BV, 96(44.9%) has candidiasis and 8(3.7%) had TV.

**Table 1** Distribution of patients according to diagnosis

Diagnosis	No. of subjects	Percentage
Bacterial vaginosis	110	51.4
Candidiasis	96	44.9
Trichomoniasis	8	3.7
Total	214	100.0

**Figure 1** Distribution of patients according to diagnosis

Vaginitis is the commonest genital tract infection in sexually active women and is associated with a significant risk of morbidity. The management of vaginitis remains largely empirical, though establishing correct diagnosis is the most important factor for successful treatment. Variable prevalence rates of infectious vaginitis, attributable to the varied etiologies studied, the detection techniques applied, patient groups involved, and the geographical locales have been reported by studies conducted globally as well as in India. In the present study majority of symptomatic women had unidentified etiology. This finding requires due consideration and indicates the need for looking into other etiological agents including but not limited to gonorrhoea, chlamydia, viruses that may lead to vaginitis.

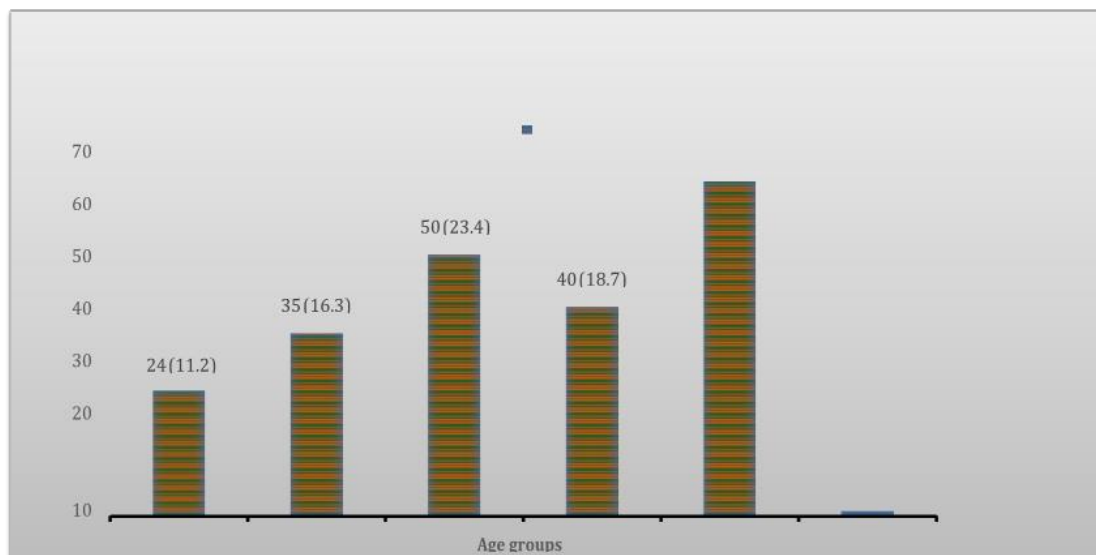
BV was the commonest infectious etiology identified in the present study and its prevalence was consistent with earlier reports.<sup>58,59,64</sup>

The prevalence of bacterial vaginosis in current study is 51.4%. Various studies show prevalence of BV ranges from 2.5% to 48%. These variations may be because of differences in study population, economic status, educational background, and method used for detection of bacterial vaginosis. The prevalence of BV in the present study is in accordance with other reports from India. It is noteworthy that the mixed microbial etiologies observed were all seen in association with BV. It may thus be speculated that women with BV tend to lose natural protection against genital tract infections leading to acquisition of coinfections like *T. Vaginalis* and *Candida*. The mechanisms underlying these relationships are not well understood and warrant further investigation.

### 3.1. Age and vaginitis

The age wise distribution of vaginitis patients found as 18-22 years patients 24(11.2%), 23-27years of patients 35(16.3%), 28-32 years of patients 50(23.4%),

33-37 years of patients 40(18.7%) and 38-42 years of patients 65(30%).



**Figure 2** Distribution patients according to age

In the present study, it was observed that particular 38-40 years of patients 64(30%) infected with vaginitis and 28-32 years of patients 50(23.4%), 33-37 years of patients 40(18.7%) also mostly suffering from the disease.

### 3.2. Marital status and Vaginitis

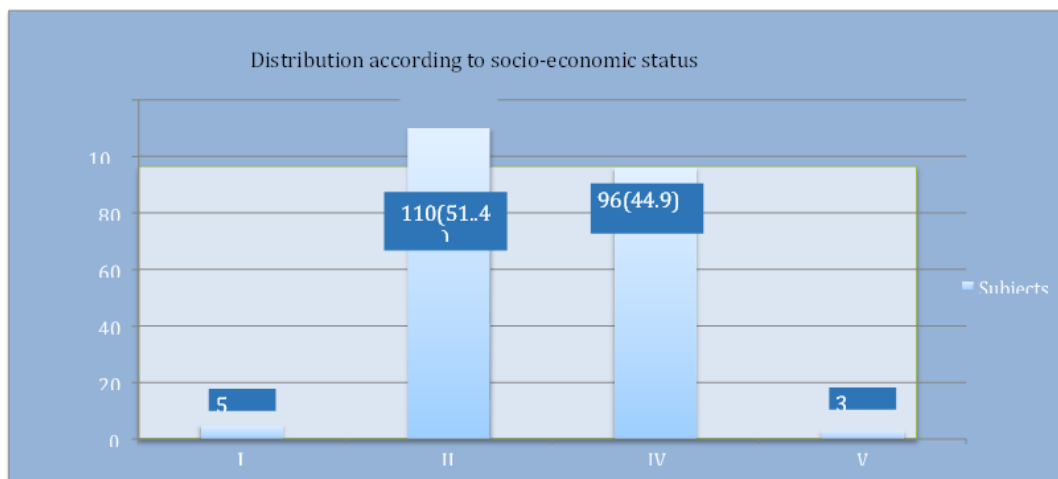
The current study shows that out of 214 patients 177(82.7%) are married, 16(7.5%) are unmarried and 18(8.4%) patients are widows. In the present study, it was observed that married women's more infected than unmarried girls.

**Table 2** Distribution of patients according to marital status

Marital status	No. of subjects	Percentage
Unmarried	16	7.5
Married	177	82.7
Widow	18	8.4
Divorce	3	1.4
Total	214	100.0

### 3.3. Socioeconomic status and Vaginitis

The vaginitis is stated that incidence of the disease is probably higher in low socioeconomic background. In this study prevalence of vaginitis among 214(9.16%) is higher in class III with 110(51.4%) in lower middle-class patients followed by class IV 96(44.9%) in upper lower class.



**Figure 3** Distribution of patients according to Socioeconomic status

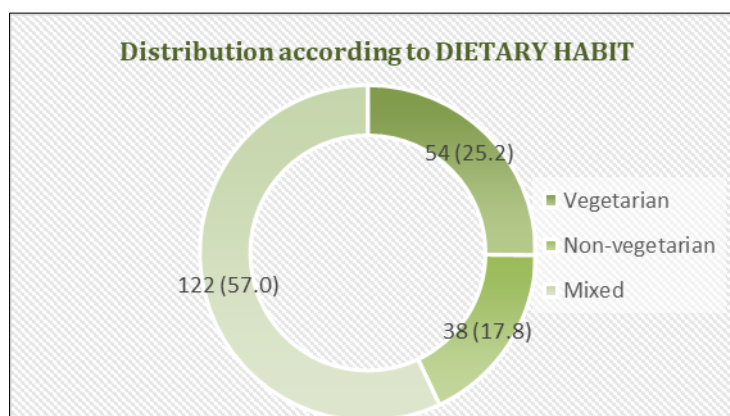
### 3.4. Associated disease and Vaginitis

In this study 48(22.4%) patients are suffering from hypothyroidism, 18(8.4%) are suffering with hypertension, 21(9.8%) are suffering from diabetes mellitus, 6(2.8%) patients suffering with both i.e. HTN and DM and 119 patients are not having any disease. In the present study, it was observed that patients with hypothyroidism 48(22.4%) are mostly experience the vaginal infections.

**Table 3** Distribution of patients according to Past history

Past history	No. of subjects	Percentage
1. Diabetes mellitus	21	9.8
2. Diabetes mellitus, Hypertension	6	2.8
3. Hypertension	18	8.4
4. Hypothyroidism	48	22.4
5. COPD	2	0.9
6. None	119	55.6
Total	214	99.9

### 3.5. Dietary habit and Vaginitis



**Figure 4** Distribution of patients according to dietary habit

In this study, it was observed that 122(57.0%) of the vaginal infected patients were consuming mixed diet i.e. veg and non veg and 54 (25.3%) were vegetarians. This study shows that prevalence of vaginitis is much higher in non-vegetarians than vegetarians.

### 3.6. Bowel and Vaginitis

In present study it was observed that 100(46.7%) patients of the vaginitis were suffering with constipation. This study shows prevalence of vaginitis is much lower in free bowel and higher in patients having constipation and irregular bowel.

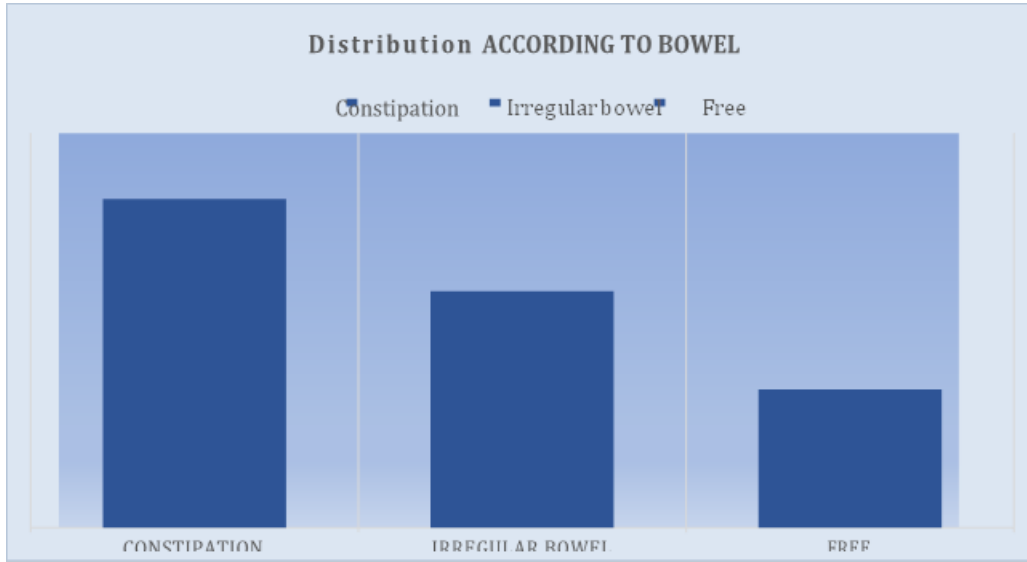


Figure 5 Distribution patients according to Bowel

### 3.7. Mizaj and Vaginitis

The temperament of subjects 107(50%) of all participants had balghami mizaj, 82 (38.3%) had safravi Mizaj, 24(11.2%) had Damavi Mizaj and 1(0.5%) had saudavi Mizaj.

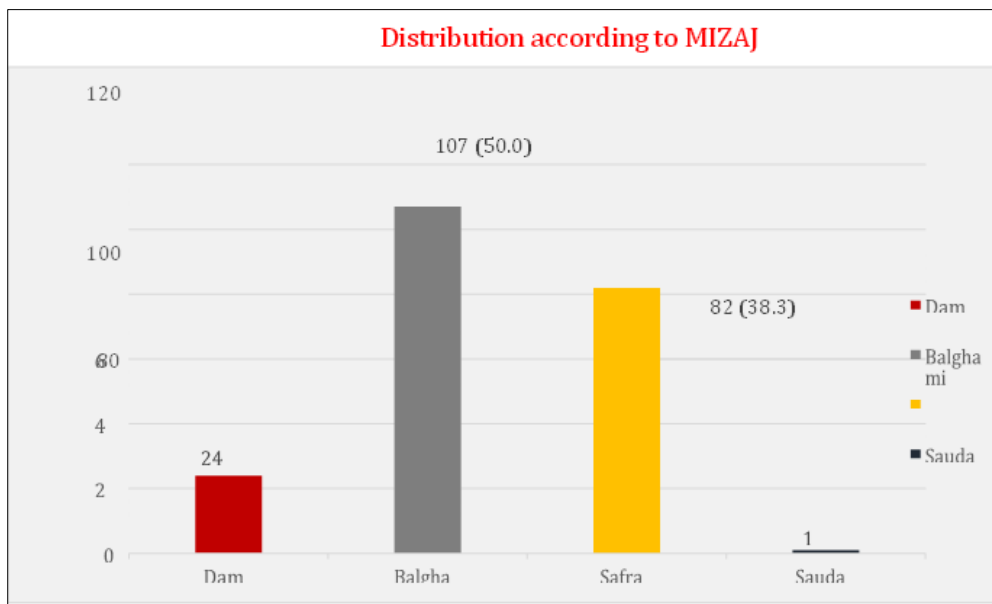


Figure 6 Distribution patients according to Mizaj

### 3.8. Distribution of the patients according to type of discharge

In the current study patients have complain of watery discharge 57(26.6%), 49(22.9%) offensive discharge, 37(17.3%) Curdy discharge and 18(8.4%) offensive yellow discharge.

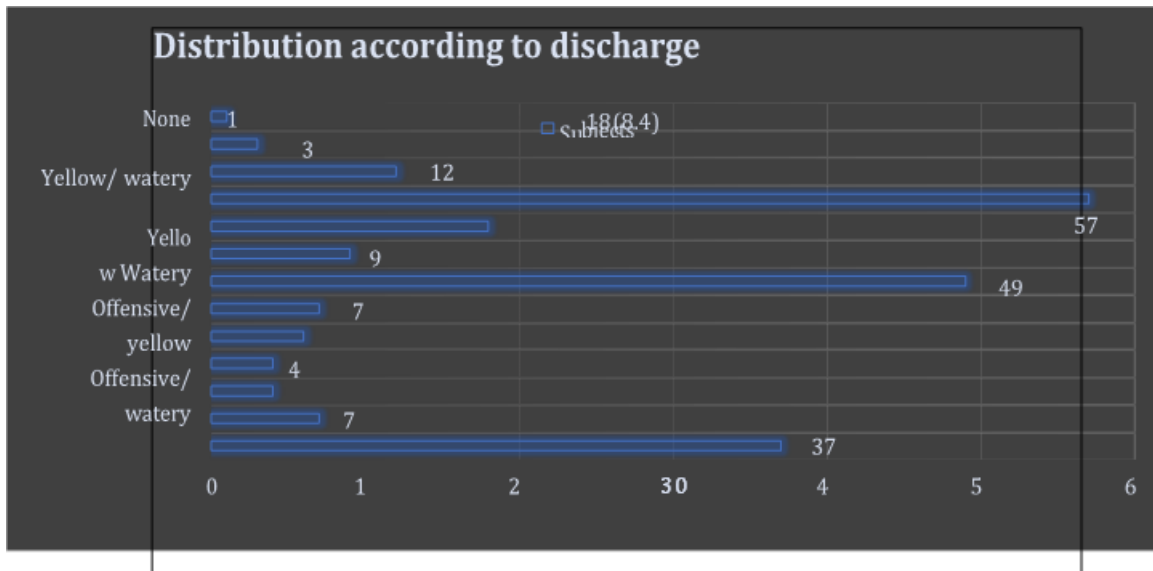


Figure 7 Distribution patients according to type of discharge

### 3.9. Distribution of patients according to pruritus

In this study 178(83.2%) patients have complains of mild pruritus vulvae , 5(2.3%) moderate itching and 1(0.5%) severe itching in vulva. 30(14.0%) patients haven't complained about itching in vulva

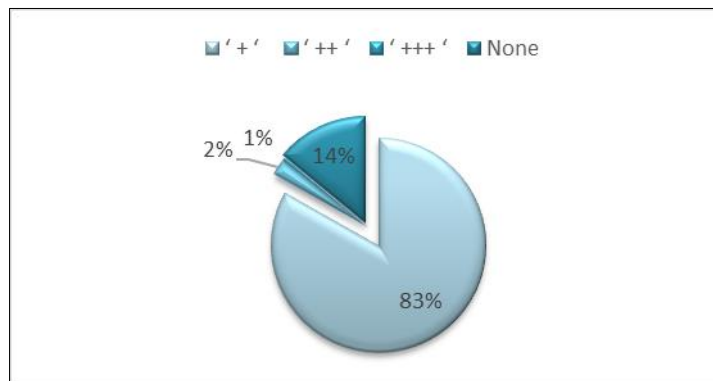
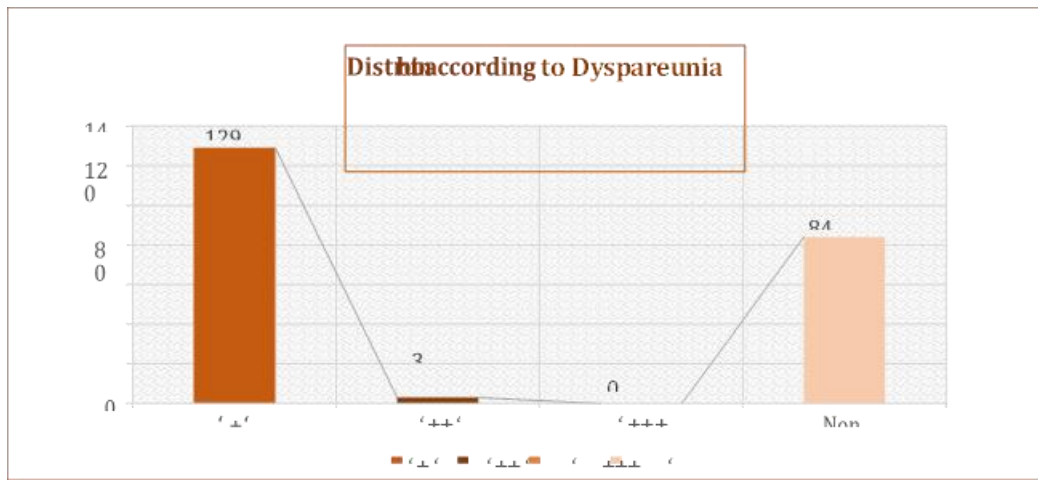


Figure 8 Distribution patients according to pruritus

### 3.10. Distribution of patients according to dyspareunia

The current study shows that 129(59.7%) patients' complaints of mild dyspareunia, 3(1.4%) have moderate dyspareunia and 84(38.9%) haven't complained about dyspareunia.

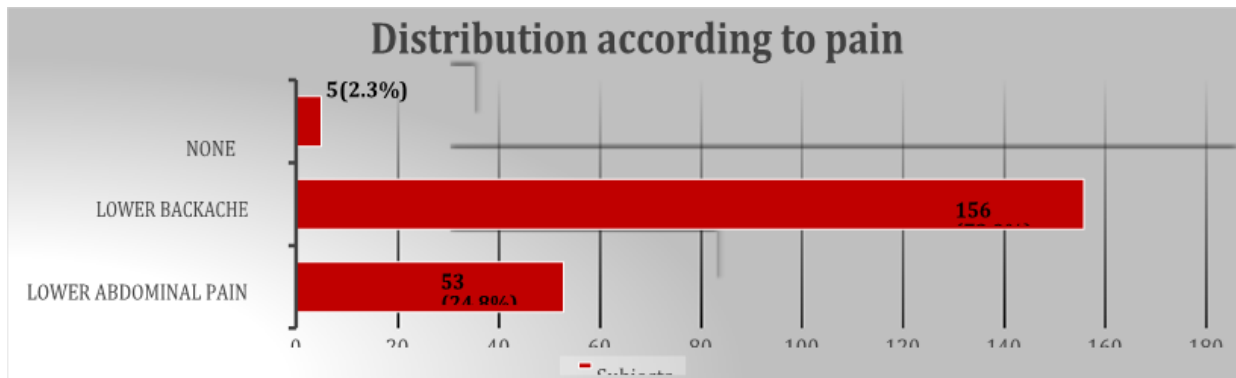




**Figure 9** Distribution patients according to dyspareunia

### 3.11. Pain and Vaginitis

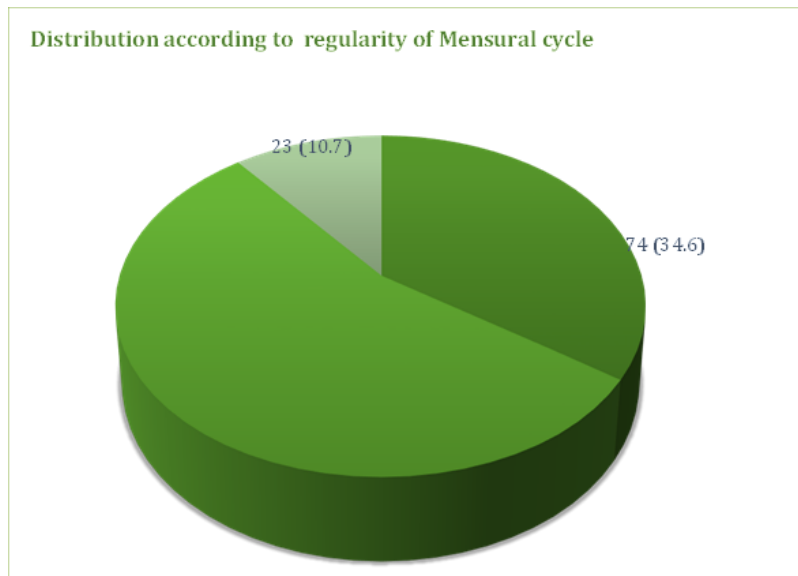
Current study shows 156(72.9%) patients suffering with lower backache, 53(24.8%) have lower abdominal pain.



**Figure 10** Distribution patients according to type of pain

### 3.12. Menstruation and Vaginitis

In the present study, it was observed that 117(54.7%) patients have regular menstrual cycle, 74(34.6%) have irregular menstrual history and 23(10.7%) have absence of menstruation.

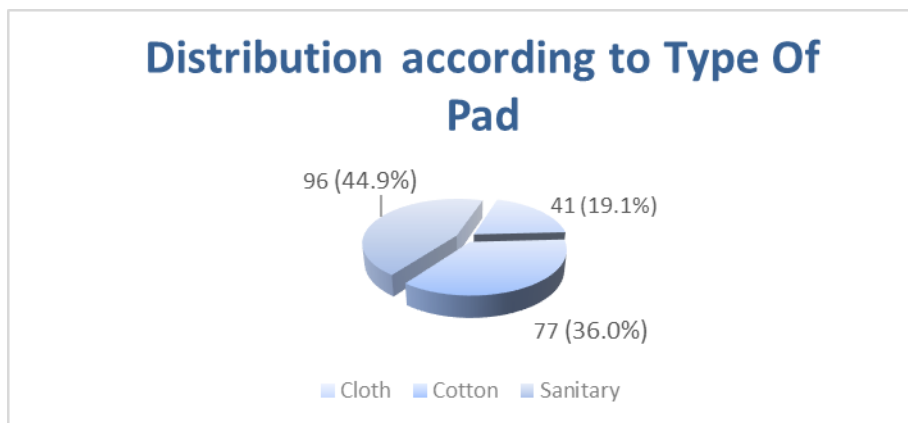


**Figure 11** Distribution patients according to regularity of mensural cycle

### 3.13. Type of pad and Vaginitis

In the present study it was observed that 96(44.9%) patients during menstruation using sanitary pads, 77(36.0%) patients using cotton pads and 41(19.1%) patients has using cloth during their menstrual cycle.

Previous study found that 64.4% of women’s using sanitary pads where 49.6% using Cloth. Sanitary pads might be comfortable but it contains chemicals that pose certain risks including rashes, genital infections and skin infections. This risk can be reduced by using cotton sanitary pads. cotton pads are comfortable and cause no risk of infections. These pads are usually biodegradable and do not cause rashes on physical movement.



**Figure 12** Distribution of patients according to type to pad

### 3.14. Contraceptives and Vaginitis

The present study shows that 98(45.8%) patients underwent with tubectomized 45(21.0%) has using intra uterine contraceptive device, 7(3.3%) have consuming oral contraceptive pills, and 63(29.4%) patients not using any type of contraceptives.

Previous study found that intrauterine contraceptive device use is reported to be associated with an increased rate of bacterial vaginosis and anaerobic organism.

**Table 4** Distribution of patients according to usage of contraceptives

Usage of contraceptives	No. of subjects	Percentage
IUCD	45	21.0
OCPS	7	3.3
OCPS/ IUCD	1	0.5
TUB	98	45.8
None	63	29.4
Total	214	100.0

#### 4. Discussion

In the present world vaginal infections with bacterial vaginosis, candidiasis and Trichomoniasis are a global health problem for women. The prevalence of vaginitis among women varies widely from country to country. A recent study on vaginitis showed that there are different prevalence rates among females in different areas and different associated factors with vaginitis

The present study was carried out on reproductive age group females and the prevalence rate of vaginitis is 214 per 2336 (9.16%). Which is different from previous study, this rate is lower than previous reported prevalence i.e. range among 110 patients in Navi Mumbai prevalence is (28.9%). This difference in the prevalence may be due to the small sample size of the study population.

Previous studies on vaginitis in TAIWAN 40% of cases effected with disease were (TV21%, BV22.8%, VVC21.7%). The prevalence in the United States is estimated to be 21.2million (29.2%) among women ages 14-49 years. Most women found to have BV 84%. In Nepal 46.96% positive cases of vaginitis. Among the positive cases BV were found in (54.3%) and Vvc are (28.8%).

The present study of 214 patients who fulfilled inclusion criteria where enrolled to estimate the prevalence. Age of the participants ranged from 18-40 years (Mean 32.0+ 6.2) among 214 participants 110(51.4%) had bacterial vaginosis (BV), 96(44.9%) has candidiasis(can) and 8(3.7%) had Trichomoniasis (TV).

In our resent study vaginitis was maximum in the 38-40 age group 60(30%) and the minimum was 24(11.2%). The elevated rate of infection in the reproductively active age and high sexual exposure. Bacterial vaginitis was called non specific vaginitis, but in our study, it is the most prevalent cause of vaginitis among the females seeking medical services from the obstetrician and gynecological department.

The present study shows that incidence of the disease is probably high in lower socio-economic background which is similar to the previous study.

This study shows that prevalence of vaginitis is much higher in non- vegetarians than vegetarians. Because certain foods that may help to maintain the vaginal PH, prevent infections and keep the vagina lubricated. Consuming foods which contain low glycemic index, high in fibbers, higher in vit-D may help prevent the infections. Previous study found that regularly eating foods which high in sugar, red meat, refined grains and organ meat is substantially associated with a higher likelihood of bacterial vaginosis.<sup>75</sup>

In our present study, following bacterial vaginosis, Vulvovaginal candidiasis, was found to take the condition vaginitis. During our study it was found that the candidiasis related vaginitis was maximum in diabetics patients which is similar to the study conducted by reza et arf.<sup>77</sup>

According to fig:6 findings among all study participants more common Mizaj was Balghami. It may be due to all infections and diseases of uterus are caused by blazing hot Balgham.<sup>9,14</sup>

In this study it was observed from table:5 that patients who is used IUCDS and OCPS probably high chances of getting infection Previous study found that Intrauterine contraceptive device use is reported to be associated with an increased rate of bacterial vaginosis and anaerobic organism.

In comparison with OCPS use is associated with a greater or similar frequency of candidiasis. The frequency of candidiasis and *C. trachomatis* is reduced in IUCD users compared to OCPS users, while that of bacterial vaginosis appears to be slightly increased. The risk of infection in the upper genital tract is greatest immediately after IUCD insertion.<sup>78</sup>

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## 5. Conclusion

The study shows that vaginitis is common among the females of reproductive age group. Amongst all the vaginitis cases bacterial vaginitis was found to be maximum in this age group. In the present study, it was observed that married women's more infected than unmarried girls. The vaginitis is stated that incidence of the disease is probably higher in low socioeconomic background. In the present study, it was observed that patients with hypothyroidism<sup>48</sup> (22.4%) are mostly experience the vaginal infections and prevalence of vaginitis is much higher in non- vegetarians<sup>38</sup> (17.8%) than vegetarians<sup>54</sup> (25.2%). According to findings among all study participants more common Mizaj was Balghami. In this study it was observed that patients who are used IUCDS and OCPS probably high chances of getting vaginal infections.

Through this prevalence study it can be said that females need knowledge about gynecological and reproductive health. As the prevalence of bacterial vaginosis was high in this study, it's suggested to screen all reproductive aged females constantly for BV with right diagnosis and timely treatment.

In conclusion we recommend that emphasis should be given to reproductive health care and education on a large scale, which could dramatically improve the health of females and reduce the risk and complications of vaginitis.

Preventive measures:

- Wash yourself well Wash the outer vaginal area (vulva) everyday with mild, unscented soaps. Wash thoroughly before and after using bathroom. Keep it as dry as possible.
- Wipe property Make sure to wipe from front to back after a bowel movement. This helps to keep from spreading bacteria from your anus to your vagina.
- Know how to properly clean their genital area while bathing or showering
- Wear loose fitting clothes, wear cotton under wears rather than synthetic Cotton increases airflow and decreases moisture build up.
- Change your tampon often. During your period make sure to change your tampon, this allows the normal flow of vaginal discharge and blood.
- Change your sanitary pad every 4-6 hours depending on your flow. Use pads and not tampons while you have an infection.
- Practice safer sex. Using condoms, dental dams and limiting the number of bed partners.
- Try yogurt and probiotics containing lactobacillus. It can reduce vaginal infections; some also recommend limiting sugary foods to prevent the growth of yeast.
- Get enough sleep. It helps keep your body immune system healthy. This helps you fight infection.
- Exercise regularly, Regular activity helps keep your body healthy.
- Lose weight, if needed. Excess weight can reduce air circulation around your vagina. This can increase your risk of infection
- Avoid multiple sexual relations and bisexuality. The more partners you have, the greater your risk of infection and using condoms helps reduce your risk. <sup>66,67,68,69,70,74</sup>

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## Compliance with ethical standards

### *Disclosure of conflict of interest:*

Before commencing the study, research protocol was submitted to Institutional ethical committee of government Nizamia Tibbi, College, Charminar Hyderabad. The study was started after ethical clearance to be disclosed.

### *Statement of informed consent*

The patients fulfilling the inclusion criteria were informed complete details of the study and stimulated to share their experiences. It is assured that all the data is collected confidential. They were given the opportunity to ask questions about the study.

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