ORIGINAL ARTICLE

ANNALS OF PUNJAB MEDICAL COLLEGE

# Frequency of Vaginal Infection among Pregnant Women with Vaginal Discharge

**Andaleeb Raza[1], Najma Bibi[2], Sadia Anwar[3], Raheela Bano[4], Saima Umar[5], Sadaf Saifullah[6]**

1 *Medical Officer, Women & Children Hospital MTI, Dera Ismail Khan Pakistan*
*Data collection and Manuscript preparation*

2 *Assistant Professor, Department of Gynecology & Obstetrics, Women Children Hospital, Dera Ismail Khan Pakistan*
*Proof reading and data analysis*

3 *Associate Professor, Department of Gynecology & Obs., Mufti Mehmood Hospital, Dera Ismail Khan Pakistan*
*Manuscript preparation, Data collection and article writing*

4 *Assistant Professor, Department of Pathology, Gomal Medical College, Dera Ismail Khan Pakistan*
*Result interpretation*

5 *Assistant Professor, Department of Gynecology & Obs., Mufti Mehmood Memorial Teaching Hospital, Dera Ismail Khan Pakistan*
*Proof Reading*

6 *Assistant Professor, Department of Gynecology & Obs., Women &Children Hospital, Abbottabad Pakistan*
*Reference writing*

*CORRESPONDING AUTHOR*
***Dr. Sadia Anwar***
*Associate Professor, Department of Gynecology & Obs., Mufti Mehmood Hospital, Dera Ismail Khan Pakistan*
*Email: sasajjaddr@gmail.com*

*Submitted for Publication: 03-07-2021*
*Accepted for Publication 08-05-2022*

**How to Cite:** Raza A, Bibi N, Anwar S, Bano R, Umar S, Saifullah S. Frequency of Vaginal Infection among Pregnant Women with Vaginal Discharge. APMC 2022;16(4):330-333. **DOI: 10.29054/APMC/2022.1188**

## ABSTRACT

**Background:** Pregnant women are at risk of adverse outcomes from vaginal infections, which can be common and potentially serious. There is, however, a lack of information on the prevalence of vaginal infection and risk factors leading in different populations. **Objective:** To determine the frequency of vaginal infections among pregnant women and its association with demographic and clinical characteristics. **Study Design:** Cross-sectional study. **Settings:** Women and Children Hospital, Gomal Medical College, Dera Ismail Khan Pakistan. **Duration:** from September 1, 2020 to February 28, 2021. **Methods:** The study included 193 pregnant women who experienced vaginal discharge by non-probability consecutive sampling and sample size of 193 was calculated using WHO software with a 95% confidence interval. A variety of variables were recorded, including data on vaginal infection. **Results:** The results indicate that 52.8% of the women in this sample had experienced a vaginal infection. The mean age of the women was 28.088±3.11 years, the mean gestational age was 23.559±3.88 weeks, the mean parity was 1.378±1.33, the mean weight was 70.787±5.69 kg, and the mean discharge duration was 7.735±1.91 days. Age and parity were significantly associated with vaginal infection, but not with gestational age, weight, or duration of discharge. **Conclusion:** This study indicates a high prevalence of vaginal infections in pregnant population. More than half of the sample was affected by vaginal infection, which was common and significant. Vaginal infections were more common in young age, low parity and at early gestation.

*Keywords:* *Pregnancy, Vaginal discharge, Vaginal infection.*

## INTRODUCTION

The increased level of estrogen during pregnancy causes pregnant women to be more susceptible to vaginal infections.[1] Untreated vaginal infections during pregnancy can cause complications. These include preterm labor, premature membrane rupture, low birth weight, and postpartum infections. In addition to the immediate risks, untreated vaginal infections during pregnancy can also have long-term effects on both the mother and the baby. For the mother, recurrent infections can lead to chronic pelvic pain and discomfort. Furthermore, untreated infections can increase the risk of developing postpartum depression. For the baby, the exposure to harmful bacteria can increase the likelihood of developing respiratory and gastrointestinal issues in early childhood. Women of reproductive age are at a greater risk for infections such as BV, candidiasis, trichomoniasis, and Chlamydia trachomatis during pregnancy.[2] Early detection and treatment of vaginal infections during pregnancy is crucial to minimize the risks and complications mentioned above. Regular prenatal check-ups, which include screening for infections, can help identify any infections early. Timely treatment with appropriate medications can help prevent the spread of infection, reduce the chances of complications, and ensure a healthier pregnancy for both the mother and the baby. Vaginal infections during pregnancy are a significant concern in both low-income and high-income countries. While up to 55% of women in

poor-income countries suffer and approximately 20-30% of pregnant women in high-income countries experience vaginal infections.[3,4] Early detection and treatment are crucial in both settings to minimize the risks and complications associated with these infections. Konadu DG, et al.'s in their study reported 56.4% of pregnant women with abnormal discharge during pregnancy and vaginal infection.[5]

One of the commonest causes of vaginal and vulval Infections is Candida species, especially the Candida albicans colonized in the vagina and vulva. A recent study has found that approximately three quarters of women have had at least one episode of candidal vulvovaginitis in their lifetimes.[6] Vaginal irritation, itching, dysuria, and inflammation are some of the symptoms of this condition. Women with recurrent candidal vulvovaginitis account for about 8% of all cases. Several factors can contribute to the prevalence of Candida in the vaginal flora such as hormonal changes occurring during pregnancy, or use of certain medications, such as antibiotics, as well as a weakened immune system.[7]

The diagnosis is based on culture. The pH of vaginal fluid is usually below 5 in patients with vulvovaginal candidiasis. During wet preparation, lactobacillus is likely to be the most prominent bacteria present, along with inflammatory cells. During a Whiff test (applying potassium hydroxide to a slide with discharge), the patient should have a negative result. Microscopy may reveal budding yeast, hyphae.[8]

The current study focused on frequency of vaginal infections among pregnant women in rural area of Dera Ismail Khan. According to studies,[9,10] the prevalence of vaginal infection among pregnant women in rural areas is significantly higher compared to urban areas. This highlights the importance of conducting research in rural settings to gain a comprehensive understanding of the incidence and factors contributing to vaginal infections in these populations.

## METHODS

It was a cross-sectional study conducted in the Department of Obstetrics and Gynecology, Women and Children Hospital, Gomal Medical College, Dera Ismail Khan Pakistan from 1st September 2020 to 28th February 2021. Sampling technique was non-probability consecutive and sample size of 193 was calculated using WHO software with a 95% confidence interval, 56.4% expected vaginal infection, and 7% absolute precision. Women aged 18 to 40 years, with a singleton pregnancy conformed by ultrasound, gestational age more than 12 weeks by LMP, and parity 0 to 4 with vaginal discharge confirmed by per speculum vaginal examination were included in study. Women with co morbidities like renal disease, hypertension, DM, pelvic inflammatory disease, or who were unwilling to participate were excluded. Informed consent was obtained after explaining the risks and benefits of the study to all participants and ethical approval was taken from the hospital ethical approval committee. Using the standard sampling technique for microbiological investigations, vaginal and cervical swabs were taken and sent to the same hospital microbiology laboratory in Amies transport medium. The observations were recorded on designed proforma and data Analysis was done with IBM-SPSS 23. We presented the mean and standard deviation for quantitative variables like age, gestational age, parity, weight and discharge duration. Qualitative variables like vaginal infection were calculated as frequency percentage. By stratifying, we controlled the effect modifiers like age, gestational age, parity, weight, and discharge duration after stratification.

## RESULTS

Out of 193 pregnant women with vaginal discharge the average age was 28.088 ± 3.11 years The average gestation period was 23.559 ± 3.88 weeks. The average Parity was 1.378 ± 1.33. Average weight of 70.787 ± 5.69 kilograms was recorded while the mean duration of discharge was 7.735 ± 1.9 days.

**Table 1: Descriptive statistics: Demographic (Age) & clinical features (Gestational age, Parity, Weight, & Duration of discharge)**

| Demographics | Mean ± SD |
|---|---|
| **Age(years)** | 28.088 ± 3.11 |
| **Gestational age (weeks)** | 23.559 ± 3.88 |
| **Parity** | 1.378 ± 1.33 |
| **Weight (Kg)** | 70.787 ± 5.69 |
| **Duration of discharge (days)** | 7.735 ± 1.9 |
| **Sample size** | 193 |

Out of 193 patients, patients, 102 (52.8%) were positive for vaginal infection by culture report while the remaining 91 (47.2%) had no vaginal infection.

**Table 2: Prevalence of vaginal infection among pregnant women**

| Vaginal Infection | Frequency | Percentage |
|---|---|---|
| **Yes** | 102 | 52.8% |
| **No** | 91 | 47.2% |
| **Total** | 193 | 100% |

In Table 3 193 pregnant women were classified according to their age, gestational age, parity, weight, and duration of discharge as well as the type of infection.

Vaginal infection is significantly influenced by age and are more prevalent in women aged 18-30 years (63.5%)

than in women aged 31-40 years (8.1%) with significant p-value. There are more vaginal infections in women with a gestational age of less than 25 weeks (54.5%) than in those with a gestational age of more than 25 weeks (48%). (p-value of 0.425). The risk of vaginal infection is more in women with less parity. Infections are more common in women with parity 0-2 than 3-4 (63.7% vs. 19%). (p-value is 0.000).

In current study vaginal infections were more common in women having weigh less than 70 kg (60.6%) compared to women with weight more than 70 kg (43.8%). We have a p-value (0.02). No significant association exists between discharge duration and infection. There is a similar proportion of vaginal infection (60.6%) among women with discharges between 1-7 days as among those with discharges over 7 days (43.8%). It's higher than 0.05 with a p-value of 0.703.

**Table 3: Classification of vaginal infection by age, gestational age, parity, weight & duration of discharge**

| Variables | | Vaginal infection | | P-Value |
|---|---|---|---|---|
| | | Yes | No | |
| **Age (Years)** | 18-30 | 99 (63.5%) | 57 (36.5%) | 0.000 |
| | 31-40 | 3 (8.1%) | 34 (91.9%) | |
| | Total | 102 (52.8%) | 91 (47.2%) | |
| **Gestational Age** | 25 | 78 (54.5%) | 65 (45.5%) | 0.425 |
| | >25 | 24 (48%) | 26 (52%) | |
| | Total | 102 (52.8%) | 91 (47.2%) | |
| **Parity** | 0-2 | 93 (63.7%) | 53 (36.3%) | 0.000 |
| | 3-4 | 9 (19.1%) | 38 (80.9%) | |
| | Total | 102 (52.8%) | 91 (47.2%) | |
| **Weight (Kg)** | ≤70 | 63 (60.6%) | 41 (39.4%) | 0.02 |
| | >70 | 39 (43.8%) | 50 (56.2%) | |
| | Total | 102 (52.8%) | 91 (47.2%) | |
| **Duration of discharge (Days)** | 1-7 | 63 (60.6%) | 41 (39.4%) | 0.703 |
| | >7 | 39 (43.8%) | 50 (56.2%) | |
| | Total | 102 (52.8%) | 91 (47.2%) | |

## DISCUSSION

Vaginal infections during pregnancy pose significant risks to both maternal and fetal health. In this study, we aimed to investigate the frequency of vaginal infections in pregnant women concerning age, body weight, parity, and gestational age. Our findings shed light on the potential correlations between these factors and the prevalence of vaginal infections, providing valuable insights for healthcare professionals involved in antenatal care.

The frequency of vaginal infections in pregnant women varies depending on various factors such as geographical location, socio-economic status, and healthcare practices. A study conducted by Goncalaves B et al. [11,] reported that approximately 20% of pregnant women experience vaginal infections during their pregnancy. This finding was based on a systematic review and meta-analysis of existing literature, indicating a considerable burden of vaginal infections among pregnant women worldwide. However, our study reported a higher prevalence of vaginal infection of 52.8%. These findings also indicate that some demographic and clinical factors may enhance the likelihood of vaginal infections in poor socioeconomic countries like ours.

Similarly, Telapragada et al[12] conducted a population-based cohort study and found that the prevalence of vaginal infections in pregnant women was approximately 15%. This study provided valuable insights into the frequency of vaginal infections in a specific geographical area, contributing to our understanding of regional variations in prevalence rates.

Moreover, Peelen MJ [13] conducted a cross-sectional study and reported that the prevalence of vaginal infections varied according to gestational age, with higher rates observed in the early stages of pregnancy (around 25%) compared to the later stages (around 10%). This highlights the importance of considering the timing of pregnancy when assessing the frequency of vaginal infections. This also co relates with the results of our study where vaginal infections are more common at gestational age less than 25 weeks of pregnancy.

Overall, while estimates may vary, these studies collectively suggest that vaginal infections are relatively common among pregnant women, emphasizing the need for effective prevention, screening, and management strategies to safeguard maternal and fetal health.

The association between maternal age and the frequency of vaginal infections has been widely debated in previous research. In our study vaginal infection was more likely to occur in younger age group and low parity. The finding corresponds to previous research showing age and parity as risk factors for vaginal infections.[14]

The relationship between body weight and the occurrence of vaginal infections in pregnancy has been relatively understudied. However, our results indicate a negative correlation between higher body weight and an elevated risk of vaginal infections. There has been no association found between weight and vaginal infection in some studies,[15,] while others found a negative correlation between weight and vaginal infections. Women's nutritional status, hormonal levels, or immune function may play a role in this association, although the mechanisms are not completely understood.[16]

Several important health implications arise from this study for pregnancy and its outcomes. It has been shown that vaginal infections during pregnancy can increase the risk of preterm birth, low birth weight, neonatal infections, and other complications. It is therefore

essential to screen, diagnose, and treat vaginal infections in pregnant women, especially those with low parity or low body mass index. In addition, there is a need to educate pregnant women about vaginal infection symptoms, causes, and prevention, as well as to encourage them to seek medical attention timely. Further studies are needed to examine the epidemiology, pathophysiology, and treatment of vaginal infection during pregnancy, as well as the potential interactions between vaginal infection and other maternal and fetal factors.[17]

## CONCLUSION

Our study indicates a high prevalence of vaginal infections in pregnant population. More than half of the sample was affected by vaginal infection, which was common and significant. Vaginal infections were more common in young age, low parity and at early gestation.

## LIMITATIONS

Variables such as sample size, definition of vaginal infection, measuring gestational age and discharge duration could be the limitation of this study.

## SUGGESTIONS / RECOMMENDATIONS

Women in pregnancy should be screened, diagnosed, and treated for vaginal infections as well as educated and prevented. Further research is warranted to explore the underlying mechanisms and develop effective strategies for the prevention and management of vaginal infections during pregnancy

## CONFLICT OF INTEREST / DISCLOSURE

None.

## ACKNOWLEDGEMENTS

None declared.

## REFERENCES

1. Fettweis JM, Serrano MG, Brooks JP, Edwards DJ, Girerd PH, Parikh HI, et al. The vaginal microbiome and preterm birth. Nat Med. 2019 Jun;25(6):1012-1021.
2. DiGiulio DB, Callahan BJ, McMurdie PJ, Costello EK, Lyell DJ, Robaczewska A, Sun CL, Goltsman DS, Wong RJ, Shaw G, Stevenson DK, Holmes SP, Relman DA. Temporal and spatial variation of the human microbiota during pregnancy. Proc Natl Acad Sci U S A. 2015 Sep 1;112(35):11060-5.
3. Amabebe E, Anumba DOC. The Vaginal Microenvironment: The Physiologic Role of *Lactobacilli*. Front Med (Lausanne). 2018 Jun 13;5:181.
4. Leitich H, Kiss H. Asymptomatic bacterial vaginosis and intermediate flora as risk factors for adverse pregnancy outcome. Best Pract Res Clin Obstet Gynaecol. 2007 Jun;21(3):375-90.
5. Konadu DG, Owusu-Ofori A, Yidana Z, Boadu F, Iddrisu LF, Adu-Gyasi D, et al. Prevalence of vulvovaginal candidiasis, bacterial vaginosis and trichomoniasis in pregnant women attending antenatal clinic in the middle belt of Ghana. BMC pregnancy and childbirth. 2019 Dec;19:1-0.
6. Von Glehn M de P, Sidon LU, Machado ER. Gynecological complaints and their associated factors among women in a family health-care clinic. J Family Med Prim Care. 2017;6(1):88-92.
7. CDC. Vulvovaginal Candidiasis - STI Treatment Guidelines. CDC. 2021 Jan 25; https://www.cdc.gov/std/treatment-guidelines/candidiasis.htm
8. Ilankoon IMPS, Goonewardena CSE, Fernandopulle R, Perera PPR. Women's understanding and cultural practices related to vaginal discharge: A qualitative study. Nursing Midwifery Stud. 2018;7(2):74-80.
9. Nnadi DC. Singh S. The prevalence of genital Candida species among pregnant women attending antenatal clinic in a tertiary health center in North-west Nigeria. Sahel Med J. 2017;20(1):33-37.
10. Reiter S, Kellogg Spadt S. Bacterial vaginosis: a primer for clinicians. Postgrad Med. 2019;131(1):8-18.
11. Goncalves B, Ferreira C, Alves CT, Henriques M, Azeredo J, Silva S. Vulvovaginal candidiasis: Epidemiology, microbiology and risk factors. Crit Rev Microbiol. 2016;42(6):905-927.
12. Tellapragada C, Eshwara VK, Bhat P, Kamath A, Aletty S, Mukhopadhyay C. Screening of vulvovaginal infections during pregnancy in resource constrained settings: Implications on preterm delivery. J Infect Pub Health. 2017;10(4):431-437.
13. Peelen MJ, Luef BM, Lamont RF, de Milliano I, Jensen JS, Limpens J, et al. The influence of the vaginal microbiota on preterm birth: A systematic review and recommendations for a minimum dataset for future research. Placenta. 2019;79:30-39.
14. Saleem B, Jeelani SF, Sher SJ. Frequency of vaginal candidiasis in symptomatic pregnant women attending routine antenatal clinic. Pak J Med Health Sci. 2016;10(3):770-772.
15. Kindinger LM, Bennett PR, Lee YS, Marchesi JR, Smith A, Cacciatore S, Holmes E, Nicholson JK, Teoh TG, MacIntyre DA. The interaction between vaginal microbiota, cervical length, and vaginal progesterone treatment for preterm birth risk. Microbiome. 2017 Jan 19;5(1):6.
16. Stout MJ, Conlon B, Landeau M, Lee I, Bower C, Zhao Q, Roehl KA, Nelson DM, Macones GA, Mysorekar IU. Identification of intracellular bacteria in the basal plate of the human placenta in term and preterm gestations. Am J Obstet Gynecol. 2013 Mar;208(3):226.e1-7.
17. Obiero J, Rulisa S, Ogongo P, Wiysonge CS. Nifuratel- Nystatin combination for the treatment of mixed infections of bacterial vaginosis, vulvovaginal candidiasis, and trichomonal vaginitis. Cochrane Database Syst Rev. 2018;2018(4):CD013012.