Original Article

Frequency of Vaginal Candidiasis amongst Pregnant Women: A Cross-Sectional Study

Lubna Naz[1], Shabnam Naz[3], Vijia Kumar Gemnani[2], Kanwal Gul[4], Sarmad Jamal Siddiqui[2] and Pritya[1]

ABSTRACT

Objective: This study evaluated the frequency of vaginal candidiasis among pregnant women.
Study Design: Cross-Sectional Study
Place and Duration of Study: This study was conducted at the Antenatal Care Clinic Sheikh Zaid Hospital Larkana from February 2019 to June 2020.
Materials and Methods: A total of 384 pregnant women were including in the study at High vaginal swabs were taken from these women for gram staining and culture to diagnosis the candidiasis.
Results: A total of 384 samples of pregnant women were examined, 216 were positive, the frequency of vaginal candidiasis showed 56.2%. The age group 21 to 30 years showing the highest number 133(61.6%) of positive candidiasis. Multigravida 188(87%) was more commonly affected than primigravida 28(13%) and commonly seen in the third trimester 136(63.0%).
Conclusion: In the study, a very high frequency of vaginal candidiasis was observed among women, so there is a keen need for related health education programs for awareness, besides effective antennal care system for early diagnosis/screening as well as prompt treatment of vagina candidiasis in pregnant women.
Key Words: Frequency, Vaginal, Candidiasis, Women, Clinic

Citation of article: Naz L, Naz S, Gemnani VK, Gul K, Siddiqui SJ, Pritya. Frequency of Vaginal Candidiasis amongst Pregnant Women: A Cross-Sectional Study. Med Forum 2020;31(11): 77-80.

INTRODUCTION

Vaginal candidiasis is characterized by vaginal discharge (like curd) and itching and is linked with a lot of trouble for the patient. Increased incidence in pregnancy and can cause complications such as miscarriage, preterm childbirth, Candida chorioamnionitis, and others.[1]

Vaginal candidiasis typically called "yeast infection", commonly occur during pregnancy,[2] so more than 20 species of Candida yeast that can cause infections in humans, such as pruritus, soreness, burning sensation, and irritation, sometimes accompanied by dysuria.[3,4]

Numerous species are innocuous commensals or endoosimbians of the host; including humans.

In any case, when the mucosal protection is upset or there is a weak immune response, after antibiotics, and usually during pregnancy.[5,6] Estimated prevalence of vaginal candidiasis up to to 75%, and mostly occur in 20-30 years age group.[8,1&23]

In developing countries, there are scanty data regarding the frequency of vaginal candidiasis. According to our best knowledge, some studies had examined the frequency of vaginal candidiasis among pregnant women in Pakistan, which was between 26.9 and 48 percent.[7, 9, 10& 15]

Currently, studies showed that the frequencies of vaginal candidiasis during pregnancy in different countries such as in a lebanian study conducted on 258 pregnant women showed 39%[11], another Ghana study showed 30.7% prevalence conducted, on 176 sample size.[12]

During pregnancy, enhance the levels of progesterone as well as estrogen hormones.[7] Due to progesterone, reduction in the power of neutrophils to fight the Candida while estrogen disturbs the defense of epithelial cells of the vagina against the infectious agent like yeast. and reduces the immunoglobin in genital secretion. During pregnancy, these problems remain continuous, lend themselves to various recurrence.[13]

During pregnancy, vaginal candidiasis may be prolonged and more severe symptoms, and for these solutions usually of long-term treatment is required.[14]

Therefore, in this scenario, such studies can improve the clinical condition of women and newborns by early examination, early diagnosis, and proper treatment.

[1.] Department of Pathology / Community Medicin[2], CMC (SMBBMU) Larkana.
[2.] Department of Obs & Gyne, S,Z (H)(SMBBMU) Larkana.
[3.] WMO, CMC (H) (SMBBMU) Larkana

Correspondence: Dr. Vijia Kumar Gemnani, Assist: Prof. Community Medicine. CMC (SMBBMU), Larkana.
Contact No: 0335-3135679
Email: gemnanivijia@yahoo.com

Received: July, 2020
Accepted: September, 2020
Printed: November, 2020

MATERIALS AND METHODS

A cross-sectional (observational) study was carried out among 384 pregnant women who were attending the care unit of SZ hospital Larkana. During antenatal visits consented pregnant women's sociodemographic, clinical data were taken, as well as screening samples were taken for pathological analysis.

Sampling technique: Convenience (non-randomized) sampling technique.

Sample Size:

The sample size was calculated according to formula[18]and the assuming frequency of vaginal candidiasis 48%, [7] so the sample size is calculated as under;

Sample size= Z^2* {p} * {1- p} ÷ C2

Sample size= 3.8416 × 0.48 × 1- 0.48 ÷0.0025

Sample size= 383.53

therefore, the sample size of 383.53 subjects of the study were calculated.

Sampling criteria

Inclusion criterion:

- Known pregnant woman,
- During any period of pregnancy (All 03 trimesters) Vaginal discharge history

Exclusion criterion:

- Unmarried women
- Menstruation history
- Pregnant women with known secondary diseases such as chronic disease e.g: Diabetes, HIV, TB, on immunosuppressive therapy,
- Use of antibiotics during the last week

Data analysis: SPSS version 16 was applied for data analysis. The mean and SD were applied for quantitative variables such as age and a t-test was applied. Ratio and proportion were calculated for qualitative data etc and chi-square tests were applied. P-value <0.05 was consider significant.

RESULTS

The cross sectional (observational) study, comprised 384 pregnant women of all trimester who participated at antenatal care clinic SZ hospital CMC/SMBB Medical University Larkana. All the subjects were analyzed regarding their age, residency, parity, trimester of pregnancy, sign and symptoms like vaginal discharge, smell, itching, redress, dysuria, use of antibiotics and others, etc

Upon analysis of the entire data, out of the 384 pregnant women examined, 216 were Candida positive, thus indicating a frequency level of vaginal candidiasis 56.2 percentages in the study population. Fig: 1

In frequency data, other variables showed the mean age of pregnant women was 27.4297 ±0.203 years and the range between 15-39 years was recorded. According to the age group (21 to 30 years) seemed more presentation 249(64.8%) in study as compared to 31 to 40 years 94(24.5%) and very low in <20 years 41(10.7%) age group while above 41 years no any case respectively.

Table 1. Pregnant women, during third trimester 227(59.1%) seemed more frequent as compared to the 2nd and 1st trimester. Analysis of parity distribution showed that the majority of women were recorded in multigravida 321(83.6%) and only 63(16.4%) were in primigravida, furthermore in residency, urban women 234(60.9%) seemed more than rural resident 150(39.1%).

Table No.1: Frequencies Data Sociodemographic and Other Variables in Pregnant Women

Frequency Data Of Demographic & Other Variables		
	=n	%
Age		
<20 years	41	10.7
21-30 years	249	64.8
31-40 years	94	24.5
>41 years	00	00
Residence		
urban	234	60.9
Rural	150	39.1
Gestation		
First trimester	54	14.1
Second trimester	103	26.8
Third trimester	227	59.1
Parity		
Primigravida	63	16.4
Multigravida	321	83.6
Vaginal Itching		
Yes	342	89.1
No	42	10.9
Vaginal redness		
Yes	239	62.2
No	145	37.8
Dysuria		
Yes	296	77.1
No	88	22.9
Discharge smell		
Yes	142	37.0
No	242	63.0
Use of antibiotic		
Yes	5	1.3
No	379	98.7
Vaginal Candidia		
Positive	216	56.2
Negative	168	43.8
Negative	168	43.8

The main sign and symptoms frequencies were observed in pregnant women were vaginal itching 310(80.7%), redness 239(62.2%), dysuria 156 (40.6%) and smell 142(37.0%).

In the laboratory, for diagnosis of candidiasis species, a high frequency of candidiasis species 216(56.2%) was observed in culture, while wet mountain preparation and gram's stain showed 324(84.4%) and 336 (87.5%) respectively.

On the bivariate analysis between the frequency of vaginal candidiasis with other variables like age showed a high prevalence of vaginal candidiasis was observed in 21 to 30 years age group 133(61.6%); but relatively very low below the ages of 20 years 19(8.8%), significant associated(p=0.019). Table 2.

Table 2. A very high significant prevalence rate of vaginal candidiasis was observed in the 3rd trimester136(63%) of pregnancy as compared to a rate of 58(26.9%) and 22(10.2%) in the 2nd and 1st trimesters, respectively (p=0.038), as shown Table 2.

Table No.2: Summarized Data Analysis Vaginal candidiasis with variables

Variable	=n	P value
Age		
<20 years	19(8.8%)	**0.019**
21-30 years	133(61.6%)	
31-40 years	64(29.6%)	
Residence		
Urban	128(59.3%)	**0.255**
Rural	88 (40.7%)	
Gestation		
First trimester	22(10.2%)	**0.038**
Second trimester	58(26.9%)	
Third trimester	136(63.%)	
Parity		
Primigravida	28(13.0%)	**0.027**
Multigravida	188(87.0%)	
Vaginal Itching		
Yes	167(77.3%)	**0.036**
No	49(22.7%)	
Redness		
Yes	150(69.4%)	**0.001**
No	66(30.6%)	
Dysuria		
Yes	98(45.4%)	**0.020**
No	118(54.6%)	
Discharge smell		
Yes	53(24.5%)	**0.060**
No	163(75.5%)	
Use of antibiotic		
Yes	02(0.9%)	**0.383**
No	214(99.1%)	

The high parity distribution showed among multigravida women that 188(87.0%) while 28(13%) were prim gravidae. significant relationship (p=0.027) Distribution of clinical presentation among vaginal candidiasis showed significant association vaginal itching 167(77.3%), redness 150(69.4%), and dysuria 98(45.4%), whereas residency, vaginal smell, use of antibiotic showed no significant association.

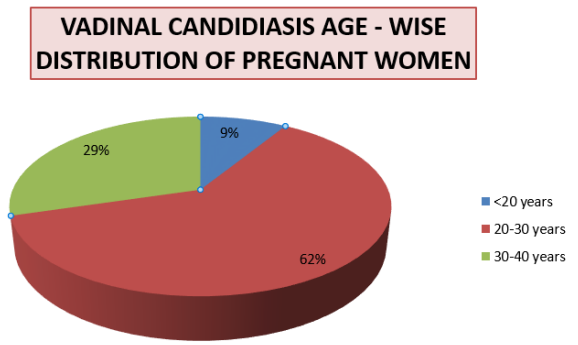

Figure No.1: Age- Wise Distribution of Vaginal Candidiasis Among Pregnant Women

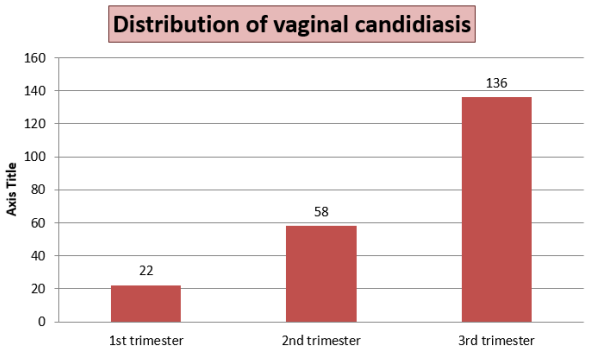

Figure No.2: Trimester Wise Distribution of Vaginal Candidiasis in Pregnant Women

DISCUSSION

The study showed a high frequency (56.2%) of vaginal candidiasis during pregnancy as compared to other studies previously observed in the state. To my best knowledge, in Pakistan, mostly the frequency rate of vaginal candidiasis in pregnancy ranges between 26.9% to 48% was observed in different regions.[7,9,10&15] Furthermore many current studies like Nigerian, Indian, and many studies revealed the current studies.[12,16,17,18,19]

Table 1. vaginal candidiasis is more prevalent among pregnant women within the 21 to 30 years age group 133(61.6%) and declines after the age between 31-40 years (29.6%), which is statistically significant (p<0.05).

Infection, in this group seemed more frequent than other group may be due to increased sexual activity and it is certainty that in this age group may possibly increase the use of contraceptives and use of drugs to prevent the pregnancy.[21] Many studied that revealed the current study.[1,9,16, & 23]

The high-frequency rate of vaginal candidiasis was observed in the third trimester 136(63.0%), which is more than double and after that second trimester 58(26.9%) and showed statistically significant (p=0.038) as well as corresponding with previous studies [9,16,1,23]

The explanation behind this is that during pregnancy, generally in the third trimester, high glycogen collects in the vagina because of elevated levels of estrogen, and good provision of carbon, which help the multiply of Candida species. Additionally, estrogen hormone enhances the candidas' affinity for the yeast cytosol receptor in epithelial cells ofvaginal[24]

The reason for this is that during pregnancy, mostly in the third trimester, high glycogen accumulates in the vagina as a result of high levels of estrogen, and provides a good source of carbon, which supports the spread of Candida species. Also, estrogen hormone enhances the affinity of Candida for the yeast cytosol receptor in vaginal epithelial cells [24]

On analysis of parity distribution showed significantly more in multigravida 188(87%), whereas 28 (13. %) were in prim gravidae. Similar results were generated in another study,[9 10 1 7 16 23]

The study showed that vagina candidiasis developed more in multigravida women, due to longer sex history and increase number of pregnancies than the prim gravidae who have less sexual exposure.[9]

Vaginal candidiasis is usually diagnosed on clinical presentations alone, while as many as half of these women may have other conditions with similar symptoms.[12]In the present study mostly the clinical presentation seemed in vaginal candidiasis such as vaginal discharge 216(100%), itching 167(77.3%), redness 150(62.2%), dysuria 98(45.4%)and smell 53(24.5%),). Shailaja S. D et al and A Maleeha et al founded similar presentation of vaginal candidiasis in pregnant women.[20,7].

CONCLUSION

In this study, vaginal candidiasis infection is observed more frequent among pregnant women, represent a major health concern. In this scenario, a great need of to improve the antenatal care, proper routine examination, early diagnostic screening, treatment and health education of vaginal candidiasis. Therefore, further studies and to assess the potential factors that prevents and reduce burden of disease.

Author's Contribution:

Concept & Design of Study:	Lubna Naz
Drafting:	Shabnam Naz, Vijia Kumar Gemnani
Data Analysis:	Kanwal Gul, Sarmad Jamal Siddiqui, Pritya
Revisiting Critically:	Lubna Naz, Shabnam Naz
Final Approval of version:	Lubna Naz

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Kanagal DV, Vineeth VK, Kundapur R, Shetty H, Rajesh A. Prevalence of vaginal candidiasis in pregnancy among Coastal South Indian women. J Women's Health, Issues Care 2014; 3(6).
2. 2.Malgaard-Nielsen D, Svanstrom H, Melbye M, Hvlid A, Paternak B. Association between use of oral fluconazole during pregnancy and risk of spontaneous abortion and stillbirth. JAMA 2016; 315:58-67
3. "Candidiasis". cdc.gov. February 13, 2014. Archived from the original on 29 December 2014. Retrieved 28 December 2014
4. Sobel JD. Candida vulvovaginitis.UpToDate. Accessed May 9, 2016. http://www.uptodate. com/ contents/candida-vulvo vaginitis
5. Kourkoumpetis T, Velmahos G, Ziakas P, Tampakakis E, Manolakaki D, Coleman J, et al. The Effect of Cumulative Length of Hospital Stay on the Antifungal Resistance of Candida Strains Isolated from Critically Ill Surgical Patients. Mycopathologia 2010;171(2):85-91.
6. Kennedy MJ, Volz PA, Edwards CA, Yancey RJ. Mechanisms of association of Candidaalbicans with intestinal mucosa. J Med Microbiol 1987;24 (4):333–41.
7. Aslam M, Hafeez R, Ijaz S, Thair M. Vulvovaginal candidiasis in pregnancy. Biomedica 2008;24: 54-56.
8. 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; 178:203-211.
9. Parveen N, Munir A, Ikram-Din A, Majeed R. Frequency of vaginal candidiasis in pregnant women attending routine antenatal clinic. J College Phys Surgeons Pak 2008;18(3):154–7.
10. Saleem B, Jeelani S, et al. Frequency of Vaginal Candidiasis in Symptomatic Pregnant Women Attending Routine Antenatal Clinic PJMHS 2016; 10(3):770-3.
11. Nahid G, Allie, Rawad H, Ali G, Rita D, Wadha A, et al. Mira Prevalence, and antifungal susceptibility of Candida albicans causing vaginal discharge among pregnant women in Lebanon. BMC Infectious Diseases 2020;20(1):1-9
12. Waikhom S, Afeke I, Kwawu G, Mbroh H, Osei G, Louis B, et al. Prevalence of vulvovaginal candidiasis among pregnant women in the Ho municipality, Ghana: species identification and

antifungal susceptibility of Candida isolates. BMC Pregnancy and Childbirth 2020;20(1):266.
13. Yeast Infections in Pregnancy: Recommended Treatments Accessed:2020-10-18 https://www.medscape.com/viewarticle/866590
14. RJ, DJ. Vaginal Candidiasis (Vulvovaginal Candidiasis) [Internet]. PubMed. 2020 [cited 18 October 2020]. Available from: https://pubmed.ncbi.nlm.nih.gov/29083806/
15. Umber T, Maryam TS, Rani F, et al. A prevalence and antifungal susceptibility of Candida species in a tertiary care hospital in Islamabad, Pakistan Pak Med Assoc 2017;67(7):986-991.
16. Nnadi DC, Singh S. The prevalence of genital Candida species among pregnant women attending antenatal clinics in a tertiary health center in North-west Nigeria. Sahel Med J 2017;20:33-7.
17. Vroumsia T, Moussa D, et al. Prevalence of Vulvovaginal Candidiasis amongst pregnant women in Maroua (Cameroon) and the sensitivity of Candida albicans to extracts of six locally used antifungal plants. J Microbiol (IRJM) 4(3);89-97.
18. https://pdf4pro.com/cdn/sample-size-formulas-williamgodden-com-1fa696.pdf.
19. Arul Anne Rose S, Sony P, Iyanar K. Prevalence of antenatal vulvovaginal candidiasis: our experience 2017;6(2):443-446.
20. Shailaja SD. Vulvovaginal candidiasis in pregnancy – a comparative study. Int J Basic Applied Med Sci 2015;5(2): 62-66.
21. Nelson M, Wanjiru W, Margaret MW. Prevalence of vaginal Candidiasis and Determination of the Occurrence of Candida Species in Pregnant Women Attending the Antenatal Clinic of Thika District Hospital, Kenya. Open J Med Microbiol 2013;3:264-272.
22. https://pdf4pro.com/cdn/sample-size-formulas-williamgodden-com-1fa696.pdf
23. A prevalence study of vaginal candidiasis among pregnant women Pooja Sutaria1*, Meera Cholera2, Shilpa B. Donga3
24. Babić M, Hukić M. Candida albicans and non-albicans species as etiological agent of vaginitis in pregnant and non pregnant women. Bosnian J Basic Med Sci 2010;10(1):89.