



## **Screening and Risk Factor Associated with Vulvovaginal Candidiasis among Pregnant Women**

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### **Authors' contributions**

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

### **Article Information**

DOI: 10.9734/JPRI/2021/v33i41B32338

Editor(s):

(1) Dr. R. Deveswaran, M.S.Ramaiah University of Applied Sciences, India.

Reviewers:

(1) Sujoy Dasgupta, Genome fertility centre, India.

(2) Mrudula Chandrupatla, All India Institute of Medical Sciences, India.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/70759>

**Study Protocol**

**Received 15 May 2021**  
**Accepted 22 July 2021**  
**Published 20 August 2021**

### **ABSTRACT**

**Background:** Vulvovaginal candidiasis is also known as vaginal yeast infection and candida vulvovaginitis there is excessive growth of yeast in vagina which leads to vaginal thrush. The sign and symptoms of vulvovaginal candidiasis includes severe vaginal discharge and itching. The symptoms get more before menstruation. The other symptoms show pain during sex, burning urination and redness over vagina. This infection mostly occurs due to excessive amount of growth of candida. According to research in all around 75% of total women suffer from vaginal candidiasis once in their lifetime and around 5% of the women suffer from twice or thrice. The preventive measures include wearing cotton undergarment rather than wearing synthetic and wearing loose cotton cloths.

**Objective:** This study is planned to assess screening and risk factors associated with vulvovaginal candidiasis among pregnant women.

**Methodology:** The Descriptive Evaluatory Research Design used for data collection procedure will be required 1 week per plan. 7-8 High vaginal swab are taken from gynae Opd in a day accordingly data will be collected. The number of pregnant women will be taken from Gynae Opd who come for check-up on the regular basis. Soon after their check-up written consent form will be given and sample will be collected. Then interview will be taken with the following questionnaires prepared

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according to the risk factors assessment scale. The pregnant women will be selected non-Probability convenient sampling technique.

**Conclusion:** Reproductive age group women have more risk of developing vulvovaginal candidiasis, because of High oestrogen levels cause an increased glycogen load in epithelium, which is a nutritional source for growth of candida & germination. Vulvovaginal candidiasis the most common gynaecologic diagnosis in the primary care setting. So, the available statistics say that there is a need for the study regarding the assessment and screening of vulvovaginal candidiasis among pregnant women.

**Keywords:** *Vulvovaginal candidiasis; candida vulvovaginitis; vaginal yeast infection; candida; high vaginal swab.*

## 1. INTRODUCTION

Vulvovaginal candidiasis is a type of mucosal infection of a female genital tract of women which is most commonly caused by candida albicans. It is characterized by itching in vagina, burning sensation, soreness near vaginal area, atypical vaginal discharge, dyspareunia, vaginal erythema and oedema. Which are related with vulvovaginal candidiasis results in changes or imbalance in sexual hormone, and its result to usage of contraceptive pills, pregnancy or therapy for hormone replacement as well as using antibiotic in the case of diabetes mellitus [1].

Many incidents of vulvovaginal candidiasis re-join to remedy which is recently available antifungal during acute vulvovaginal candidiasis is mostly curable with recent chemotherapeutic and stay in their place for subset of the population among females those who are diagnosed with vulvovaginal candidiasis [2].

Primary infection is arising and it is not connected with any make susceptible factors to find out with acute vulvovaginal candidiasis. Hormonal replacement therapy and diabetes mellitus are secondary predisposing factors been noted [3]. Females those who are diagnosed with recurrent vulvovaginal candidiasis specifically responds to antifungal treatment because of little aversion to the disease [4].

Vulvovaginal is one of the common infections that nurses deal with daily. Yeast infection are not always be prevented so however, that are associated with specific risk. Factors that nurses can counsel women to alert or avoid [2]. There are three main cause of infection those are bacterial vaginosis, vaginal yeast infection, and trichomoniasis. Despite of these there are many other causes which includes allergies related to any substance from soap or spermicides, and it

leads to decrease in oestrogen level at the time of breastfeeding and menopause and these causes are changes as the age varies [5]. These complications may lead to regular discomfort such as daily discomfort, infection of skin and many more, because of rashes scraping, and other causative conditions includes candida infections and Neisseria gonorrhoea [6].

The diagnosis of these disease is done according to patients' condition, microscopic examination and culture is done to examine the growth of the yeast by discharge. Many advices which are given the following are keeping the genital area clean and dry, its more necessary to keep it clean and rising with only plain water only [7]. Yes, it is necessary to clean vagina after sexual contact and menstruations but using douching may be harmful in many conditions. Using of condoms are suggested to avoid any kind of sexually transmitted diseases. Antibiotic therapies are recommended to prevent the yeast infections [8].

### 1.1 Rational of the Study

Vulvovaginal candidiasis is a major problem which India is dealing with. The socioeconomic status is based on directly to the health status of pregnant women. The lack of awareness and understanding regarding personal hygiene and knowledge regarding vaginal candidiasis is necessary during pregnancy [9].

Among pregnant women vulvovaginal candidiasis is been due to imbalance in oestrogen level, alteration in vaginal pH more amount of oestrogen leads in production of glycogen which helps the organism like yeast or bacteria to grow faster in that region, and it leads to more prone to infection. At the time of pregnancy women are more risk to get infection which also includes urinary tract infection and bacterial vaginosis. Vulvovaginal candidiasis is

most common in second and third trimester of pregnancy and hence it is very essential to cure this infection as soon as possible for avoidance of spreading it to the baby at the time of vaginal delivery. The factors which contracting during pregnancy are hormonal changes due to pregnancy, hormone medications, taking antibiotics and steroids, high level of blood sugar and impaired immune system. Treating vulvovaginal candidiasis during pregnancy with medicines is bit harmful to the mother and baby, hence instead of oral pill antifungal treatment that is topical applications are recommended to fight for infection. Treatment like terazol and Monistat are given which are safe for pregnancy, yeast infections have the chances of passing through vagina to face of baby soon after baby delivered. It is also called "thrush", and can be treated with the Nystatin, another anti-fungal medication [10].

## 1.2 Aim of the Study

To assess vulvovaginal candidiasis and to identify risk factor among pregnant women in selected hospital.

### 1.2.1 Objective

1. To assess vulvovaginal candidiasis among pregnant women.
2. To identify risk of developing vulvovaginal candidiasis among pregnant women.
3. To associate risk factor, score of vulvovaginal candidiasis among pregnant women with their demographic variables.

## 2. METHODOLOGY

The Descriptive Evaluatory Research Design used for data collection procedure will be required 1 week per plan. 7-8 High vaginal swab are taken from gynae Opd in a day accordingly data will be collected. Written permission is taken from A.V.B.R.H hospital. The number of pregnant women will be taken from Gynae Opd who come for check-up on the regular basis. Soon after their check-up written consent form will be given and sample will be collected. Then interview will be taken with the following questionnaires prepared according to the risk factors assessment scale. The pregnant women will be selected non-Probability convenient sampling technique with sample size 43.

### 2.1 Inclusion Criteria

- All trimester mothers.

- Women who are willing to participate in the study.

### 2.2 Exclusion Criteria

- Women who are on antifungal therapy in last 30 days.
- Women having recent history of urinary tract infection.

### 2.3 Withdrawal Criteria

Participants who fulfil the following criteria will be withdrawn from the study:

- Want to withdraw from the study
- Not fulfilling study schedule

### 2.4 Sample Size

$$n = X. N. P (1-P) / C^2 (N-1) + X^2.P (1-P)$$

Where;

$X^2$ =chi-square value for 1 degrees of freedom at same desired probability level this is 3.84 at 5% level of significance.

P= 50% proportion

C= confidence interval of one choice i.e., as CI=0.05

N=No of patients of vaginal candidiasis during one year at AVBRH =48

$$n = 3.84 \times 48 \times 0.50 \times 0.50 / (0.05^2 \times 47) + (3.84 \times 0.50 \times 0.50)$$

$$= 46.08 / 0.1175 + 0.96$$

$$= 46.08 / 1.0775$$

$$= 42.76$$

$$= 43$$

The sample size used for this research study was 43 Pregnant women.

### 2.5 Outcome Measures

#### 2.5.1 Primary outcome

It includes the assessment of screening with vulvovaginal candidiasis among pregnant women with the help of high vaginal swab.

### 2.5.2 Secondary outcome

Consist of the risk factors of vulvovaginal candidiasis among pregnant women.

### 2.6 Data Management and Monitoring

The research from the tool after updating theoretical risk factor associated vulvovaginal candidiasis, where it will help to rule out the incidence of vulvovaginal candidiasis among reproductive female. The risk assessment scale will help to understand description of vaginal candidiasis risk score. The pregnant women will be surveyed to assess the risk factor of vaginal candidiasis by using risk assessment scale.

Risk status was classified with “no risk” means NO with the score “zero”, “with risk” means YES with the score of “one”.

**Section I:** It consist of assessment of vulvovaginal candidiasis in women with the help of high vaginal swab test. **Section II:** It consist of risk factor Assessment scale to identify risk of developing vulvovaginal candidiasis among pregnant women.

### 2.7 Tool for Data Collection

**Section A:** Demographic variables of the age, education, income, occupation, parity, gravida, Trimester.

**Section B:** Risk factors assessment scale for vulvovaginal candidiasis.

### 2.8 Statistical Analysis

SPSS 24.0 and Graph Pad Prism 7.0 version is used for analysis.

The statistical tests used for the analysis of the result were:

1. Chi-square Test
2. Pearson' Correlation Coefficient
3. Reliability Analysis

### 2.9 Descriptive Method

For analysis of demographic data will be going used frequency and mean, mean percentage and standard deviation will be used for assessing the

prevalence of vulvovaginal candidiasis and its risk factors among pregnant women.

### 2.10 Inferential Statistics

For association between vulvovaginal candidiasis and risk of developing vulvovaginal candidiasis among pregnant women.

### 2.11 Ethics and Dissemination

The study is sanctioned by the Institutional Ethics group of DMIMS (DU), Ethics approval was obtained from (DMIMS(DU)/IEC/DEC-2019/8690). All participants will be asked to read and sign the informed consent. Proper explanation about purpose of study and nature of adjustment scale involved in the study was given to the samples. Information about the samples was handled properly so that confidentiality and anonymity are maintained. Information will not use or released outside the terms of the agreement.

## 3. EXPECTED OUTCOMES/RESULTS

The pilot study was conducted from 12th oct to 17th oct 2020 as per laid down criteria 07 samples were taken from selected hospitals of Wardha using by non-probability convenient sampling technique.

At the beginning, patients form outpatient department that are pregnant women had been be tested those who have come for regular antenatal check-ups. Females with symptoms and without symptoms are selected for this study. Structured questioner on demographic variables and observe by using risk factor assessment scale for vulvovaginal candidiasis.

High vaginal swab was taken from every patient, each sample required 15 mins of time to finish this procedure, and the sample were sent to microbiology department for further investigations. The results of pilot study states that out of 07 sample not a single sample were positive for vulvovaginal candidiasis but women were positive for other infections, those are 2 were positive for klebsiella pneumoniae, 1 positive for pseudomonas aeruginosa and 1 was positive for E coli and staphylococci and others were Not even normal flora grown was found.

## 4. DISCUSSION

Similar study was conducted in Mangalore, Karnataka India were 118 pregnant women were

analyses and its shows that 50% of pregnant women were positive for candidiasis and giving the prevalence of 42.37% which shows that majority of vulvovaginal candidiasis if found in reproductive age that is from 26-30yrs of age, and they conclude that incorporation of a screening protocol in routine antenatal check-up for early diagnosis of candidiasis and its treatment by cost effective drugs should be recommended [11].

And another study was conducted in port Hardcourt, River states which aimed was to determine the prevalence of candida albicans among the women, the study shows that 36% of women had positive for candida albicans and 64% of women were negative. It concludes that prevalence is higher in pregnant women with a significant relationship with age [12].

The similar study was conducted in Ghana which aim was to assess the prevalence of vulvovaginal candidiasis among pregnant women. Were the highest frequency of vulvovaginal candidiasis was recorded in pregnant women in their third trimester (57.4%). 49 Further they had concluded with the reason that is the reason is just because pregnancy mostly in the third trimester, levels of oestrogen is specifically high [13].

The similar study was conducted in Karnataka, India which aimed was to assess the risk of vaginal candidiasis among pregnant women, the study shows that majority that is (53%) of the pregnant women belongs to no risk category and (47%) of pregnant women belongs the risk of developing vulvovaginal candidiasis [14].

## 5. CONCLUSION

Vulvovaginal infection is the common infection faced by around 75% of women all around once in their lifetime, mostly it affects the working women, these kinds of yeast infections are not always been prevented so, it's necessary to aware by the associated risk factors and prevention is needed. Personal hygiene, sexual history and diet also affects the factors for vulvovaginal candidiasis. Hence there is need of screening and ruling out the risk of vulvovaginal candidiasis among pregnant women.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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