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Original Article

Prevalence of Candidiasis Among Symptomatic Pregnant and Non-Pregnant Women in New Damietta, Egypt

Weam Zanaty[1*]; Moustafa Abdelnasser[2]; Abd Elraouf Oun[3]; Abdelmoneim Ghorab[1]

[1] Department Microbiology and Immunology, Damietta Faculty of Medicine, Al-Azhar University, Damietta, Egypt.
[2] Department Microbiology and Immunology, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.
[3] Department Obstetrics and Gynecology, Damietta Faculty of Medicine, Al-Azhar University, Damietta, Egypt.

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*Corresponding author

Email: weamzanaty19@gmail.com

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Abstract

Background: Vulvovaginal candidiasis [VVC] is a widespread gynecological issue affecting women globally. This study aimed to determine the prevalence of vaginal candidiasis among symptomatic pregnant and non-pregnant women as its relationship with predisposing factors of this infection.

Methods: This study was carried out on patients attending the outpatient clinic at Al-Azhar University Hospital at New Damietta from September 2023 to September 2024. The study group included 50 symptomatic pregnant women and 50 symptomatic non-pregnant women. High vaginal swabs were taken, and direct smears were stained with gram stain and cultured on Sabouraud's dextrose agar plates. Germ tube test, culture on chromogenic agar, carbohydrate assimilation test, sugar fermentation test and growth at 45°C were done to differentiate between the different species of *Candida*. An anti-fungal sensitivity test was also done.

Results: In this study, *Candida albicans* was detected in 27[54.0%] and 36 [72.0%], *Candida krusei* in 18 [36%] and 13 [26%] and *Candida tropicalis* in only one case in non-pregnant and pregnant women, respectively, with no significant differences between both groups. Again, no significant difference has been found between pregnant and non-pregnant women in the sensitivity to nystatin, with most isolates being sensitive to nystatin [58% in non-pregnant and 70% in pregnant women]. A significant difference has been found across *Candida* species for sensitivity to nystatin, itraconazole, and fluconazole [p<0.001]. *C. albicans* showed a high level of sensitivity [98.4%] to nystatin, while *C. krusei* and *C. tropicalis* displayed higher resistance to nystatin [90.3% and 100%, respectively]. *C. albicans* showed higher resistance [87.3%] to itraconazole. On the other hand, *C. krusei* and *C. tropicalis* isolates were intermediately resistant to itraconazole [74.2%]. However, *C. albicans* were highly resistant to fluconazole [93.7%], most of the *C. krusei* isolates [83.9%] were sensitive, and *C. tropicalis* showed 100% sensitivity to this antibiotic.

Conclusion: The findings of this study indicate that vaginal candidiasis is more common in pregnant women compared to non-pregnant women. It is strongly recommended to conduct thorough investigations and provide timely treatment for vaginal infections to prevent potential complications.

Keywords: Vulvovaginal candidiasis [VVC]; Candidiasis Prevalence; Egypt; Antifungal susceptibility.

INTRODUCTION

Vulvovaginitis is an inflammatory condition that impacts both the vulva and vagina, most commonly occurring in women during their reproductive years. It can arise from a variety of causes, with one of the most frequent being candidiasis, a fungal infection caused by *C. albicans*. This opportunistic fungus exists in several forms and is responsible for vaginal candidiasis, which makes up roughly one-third of all vulvovaginitis cases [1].

Candidiasis often develops as a secondary infection, particularly in individuals with weakened immune systems. It is also known by other terms, such as candidosis, moniliasis, and thrush. When it affects the vaginal area, the condition is characterized by symptoms like itching, a burning sensation, and a thick, white discharge resembling cottage cheese [2].

Several factors increase the likelihood of developing vaginal candidiasis, including pregnancy, a weakened immune system, Human Immunodeficiency virus [HIV] infection, diabetes, the use of contraceptives, and antibiotic therapy [3].

Pregnancy, in general, introduces systemic and genital changes that heighten the risk of infections, suggesting that pregnant women may be more vulnerable to sexually transmitted pathogens. Immune adaptations, both humoral and cellular, along with hormonal shifts during pregnancy, likely contribute to alterations in the vaginal microbiota, increasing susceptibility to infections. While these changes theoretically weaken local defenses for all pregnant women, some manage to maintain a balanced microbiome, avoiding conditions like vulvovaginitis [4].

Vulvovaginitis during pregnancy not only affects the mother but is also associated with serious complications, including preterm labor, early rupture of membranes, low birth weight, and postpartum infections. Preterm birth complications are the primary cause of neonatal deaths worldwide, accounting for about 35% of the 3.1 million annual neonatal fatalities. Genital infections are a major contributing factor to this global health challenge [5].

Studies have demonstrated that women with untreated asymptomatic candidiasis experienced a higher rate of spontaneous preterm births compared to those without the infection, with rates of 6.25% and 2.99%, respectively [6].

AIM OF THE WORK

This study aimed to determine the prevalence of vaginal candidiasis among symptomatic pregnant and non-pregnant women who attending outpatient clinic in Al-Azhar University Hospital at New Damietta, as well as to study the relationship with predisposing factors of this infection.

METHODS

Type of study: This study was a cross-sectional study.

Place of the study: The study was done at Al-Azhar University Hospital in New Damietta City, located in Damietta Governorate, Egypt.

Sampling type: A systemic random sampling technique was used.

Sample size estimation: By using epi info prog. [7]. Depending on the following data: Power of the test: 80%, Confidence level: 95%. So, the minimum sample size will be 100 patients.

Subjects: The study was done on hundred women complaining of vaginal candidiasis. They were selected from patients attending the outpatient clinic in Al-Azhar University Hospital at New Damietta from September 2023 to September 2024.

Classification of the studied population:

- Group I: Fifty pregnant women with symptoms suggestive of vaginal candidiasis.

- Group II: Fifty non-pregnant women with symptoms suggestive of vaginal candidiasis.

Inclusion criteria: The criteria included symptomatic women with thick white vaginal discharge, pruritis and associated symptoms such as dysuria, dyspareunia, and erythema. In addition, age: 18-45 years old.

Exclusion criteria: these included asymptomatic women; - Age: below 18 and above 45 years old; Menstruating women; Women who have used antifungal drugs.

B. Ethical consideration: Informed consent was obtained from each subject studied before data collection. Privacy and confidentiality of data were considered, and the data was used only for scientific purposes.

C. Pilot study: A pretest study was carried out during the preparatory research phase [about 10% of participants] to test the studied variables and to help in formulating the final form of the questionnaire.

2. Implementation phase:

A. Data collection: Women who agreed to participate in this study were asked to complete a predesigned, structured, self-administered questionnaire. The socio-demographic and identification data were included in the study questionnaire as age, residence and trimester. The questionnaire also included data about knowledge, attitudes and practice of transition care.

B. Sample collection: High vaginal swabs were collected using sterile swab sticks and labelled appropriately. Samples were placed into Sabouraud's dextrose broth transporting media, which maintain the viability of Candida spp. for up to 4 days at room temperature or under refrigeration.

Methods:

A- Direct smear: A smear was prepared directly from specimens and stained with gram stain for the detection of large oval gram-positive budding yeast cells with pseudohyphae.

B- Culture: Samples were seeded on Sabouraud's dextrose agar [SDA] plates with chloramphenicol. The plates were incubated at 30 ° C for 48 h. *Candida spp.* were evidenced by the production of creamy, smooth, pasty, and convex colonies, which may become wrinkled on further incubation [8].

C- Identification by morphology and biochemical reactions:

1-Gram stain and microscopic examination: Colonies were stained with gram stain to confirm the presence of *Candida spp*. [9].

2-Germ tube test: This technique served as a preliminary test to identify *Candida albicans*. A single yeast colony from a pure culture was introduced into 0.5 ml of human serum and incubated at 37°C for 2 to 4 hours. After incubation, a small amount of the serum was transferred to a microscope slide, covered with a cover slip, and examined under a microscope at 40× magnification to detect the presence of germ tubes [10].

3-Chromogenic agar culture: Each isolate was cultured on Sabouraud's dextrose agar [SDA] at 30°C for 48 h. After this, they were subcultured on CHROMAgar and incubated at 30°C for 48 h. The CHROM Agar allows selective yeast isolation, identifying colonies of *C. albicans, C. dubliniensis, C. tropicalis* and *C. krusei* by morphology and colour reaction [11]. *C. albicans* produces leaf-green colored colonies, *C. tropicalis* colonies are dark blue-grey with a purple halo, and *C. krusei* forms pink colonies with a whitish border. Colonies of other species were entire and smooth, and colony colour ranged from white to dark pink [12].

4-Carbohydrate assimilation test: The carbohydrate assimilation test determines the ability of a yeast isolate to use a particular carbohydrate substrate as its sole carbon source in a medium. In this test, a commercial kit called RapID yeast plus system was used.

5-Sugar Fermentation Test: A liquid medium was prepared using 1% peptone, 0.5% sodium chloride, and Andrade's indicator. Filter-sterilized sugars, including glucose, maltose, lactose, and sucrose, were added to the medium at a concentration of 2%. The mixture was then distributed into test tubes, each containing a Durham tube, and sterilized via autoclaving. These four sugars were utilized to identify each Candida isolate. Each test tube was inoculated with 0.1 ml of yeast suspension and incubated at 25°C for one week. Observations were made every 24 hours to detect acid production [indicated by a pink colour] and gas formation [visible in the Durham tube].

6-Growth at 45°C: The ability to grow at 45°C is a key test to distinguish *C. dubliniensis* [which does not grow] from *C. albicans* [which grows]. This test was applied to samples that were positive in the germ tube test and produced green colonies on CHROMAgar [13]

7-Antifungal sensitivity test: Disks containing antifungal agents were placed onto an agar plate inoculated with the fungus. After incubation, the zones of inhibition were measured to evaluate the effectiveness of the agents in suppressing fungal growth [14].

Statistical analysis: The collected data was revised, coded, and tabulated using the Statistical Package for Social Science **[IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.]. The chi-square test** was used to examine the relationship between two qualitative variables. A ***p* value** is considered significant if <0.05 at confidence interval 95%.

RESULTS

The current study included a hundred symptomatic women, fifty pregnant and fifty non-pregnant, who presented with suspected vaginal candidiasis at Al-Azhar University Hospital in New Damietta. The results included various demographic factors such as age, residence, and trimester for pregnant women, along with clinical symptoms including erythema, pruritis, burning, dyspareunia, and dysuria. Additionally, the study identified different *Candida species* through microbiological methods like germ tube production and chrome agar culture. It assessed the antifungal sensitivity of the isolates to Nystatin, Itraconazole, and Fluconazole.

Demographic Data: There was a significant difference in the age distribution between isolates from pregnant and non-pregnant women [p=0.036], with a higher percentage of younger women [18-25 years] in the pregnant group [28%] compared to the non-pregnant group [14%]. In contrast, a higher proportion of women aged 36-45 were non-pregnant. In terms of residence, there was no significant difference between the two groups [p=0.644], with the majority of participants in both groups were from rural areas. Additionally, most of the pregnant group of women were in their first trimester [54%], followed by the second trimester [32%], with fewer women in their third trimester [14%]. There was no significant association between diabetes and pregnancy status [p = 1.000]. In both groups, 90.0% of participants were non-diabetic, while 10.0% had diabetes. The use of corticosteroids was low in both groups, with 4.0% of non-pregnant women and none of the pregnant women reporting its use. The association was not statistically significant [p = 0.475]. Similarly, no participants reported using other immune-suppressives in either group [p = 1.000]. Antibiotic use was reported in 6.0% of non-pregnant women and 8.0% of pregnant women, with no significant association between antibiotic use and pregnancy status [p = 1.000] **[Table 1, Figure 1].**

Distribution of *Candida spp.* in the study groups: There was no significant difference in the distribution of *Candida* species recovered from the pregnant and non-pregnant women for *C. albicans* [p=0.257], *C. krusei* [p=0.369], and *C. tropicalis* [p=1.000]. No growth was detected in the non-pregnant group more than the pregnant group [p=0.046], Germ tube formation was detected, with similar rates in both groups [p=0.480]. Similarly, the chrome agar culture results did not show

significant differences between both groups, while *C. albicans* produced mostly green colonies in both groups [p=0.317] [Table 2].

Antifungal sensitivity test: There was no significant difference between isolates from pregnant and non-pregnant women in the sensitivity to nystatin [p=0.857], with most isolates being sensitive to nystatin [58% in non-pregnant and 70% in pregnant women, p=0.453]. Although a higher percentage of pregnant women were resistant [70%] to itraconazole as compared to non-pregnant women [50%], no statistical difference [p=0.197]. Fluconazole sensitivity showed a significant difference in intermediate resistance, with 10% of non-pregnant women being intermediate resistant, while none of the pregnant women exhibited this resistance [p=0.025]. However, no significant difference was observed in full resistance or sensitivity to fluconazole between the groups [Table 3].

Relation between *Candida* species and Culture Characteristics: Significant differences were observed between ***Candida* species** in terms of germ tube production and chrome agar culture results [p<0.001]. **Germ tube production** was found that all *C. albicans* isolates were positive for germ tube production, while nearly all *C. krusei* [96.8%] and all *C. tropicalis* [100%] isolates did not produce germ tubes [Figure 2]. Again, all *C. albicans* isolates were produced with green colonies **on CHROM agar**, while *C. krusei* was predominantly produced as pink colonies [96.8%]. Interestingly, *C. tropicalis* isolates were produced as steel blue colonies on this medium, making this an identifying feature for *C. tropicalis*. A statistical difference has been detected [p<0.001] [Figure 3].

Relation between *Candida species* and Antifungal Sensitivity: A significant difference has been found across species for sensitivity to nystatin, itraconazole, and fluconazole [p<0.001].*C. albicans* showed a high level of sensitivity [98.4%] to nystatin, while *C. krusei* and *C. tropicalis* displayed much higher resistance to nystatin [90.3% and 100%, respectively]. [Table 4]. *C. albicans* showed a higher resistance [87.3%] to itraconazole. On the other hand, *C. krusei* and *C. tropicalis* isolates were intermediate resistant to itraconazole **[**74.2%**]**. Again, *C. albicans* was highly resistant to fluconazole [93.7%]. However, the majority of *C. krusei* isolates [83.9%] and all *C. tropicalis* isolates [100%] were sensitive to fluconazole.

Table [1]: Demographic data according to study groups**.**

		Non-pregnant n=50	Pregnant n=50	Test Result
Age [years]	18-25	7[14.0%]	14[28.0%]	X2: 6.664, p=0.036*
	26-35	26[52.0%]	29[58.0%]	
	36-45	17[34.0%]	7[14.0%]	
Residence	Rural	39[78.0%]	36[72.0%]	X2: 0.213, p=0.644
	Urban	11[22.0%]	14[28.0%]	
Trimester	First trimester	-	27[54.0%]	-
	Second trimester	-	16[32.0%]	
	Third trimester	-	7[14.0%]	
Diabetes	No	45 [90.0%]	45 [90.0%]	X²: 0.000, p1=1.000
	Yes	5 [10.0%]	5 [10.0%]	
Corticosteroids	No	48 [96.0%]	50 [100.0%]	X²: 0.510, p1=0.475
	Yes	2 [4.0%]	0 [0.0%]	
Cytotoxic drugs	No	50 [100.0%]	50 [100.0%]	X²: 0.000, p1=1.000
Antibiotics	No	47 [94.0%]	46 [92.0%]	X²: 0.000, p1=1.000

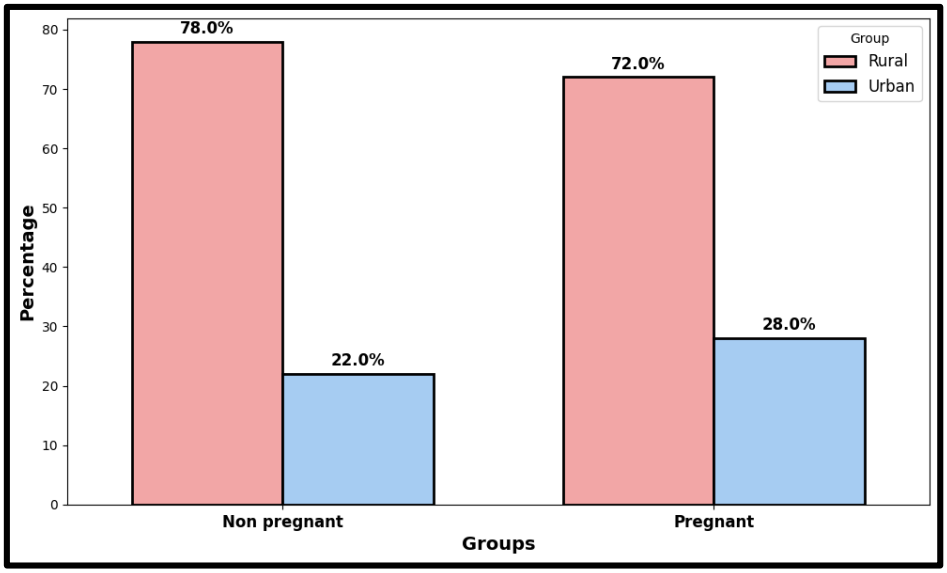

Figure [1]: Residence in study groups.

Table [2]: Cultural Characteristics of the Samples Taken from the Study Groups.

		Non-pregnant	Pregnant	p- value
		n=50	n=50	
***Candida* species**	*albicans*	27[54.0%]	36[72.0%]	0.257
	krusei	18[36.0%]	13[26.0%]	0.369
	tropicalis	1[2.0%]	1[2.0%]	1.000
	No growth	4[8.0%]	0[0.0%]	0.046*
Production of germ tube	No	18[36.0%]	14[28.0%]	0.480
	Yes	28[56.0%]	36[72.0%]	0.317
Culture in chrome agar	Green	27[54.0%]	36[72.0%]	0.317
	Pink	18[36.0%]	13[26.0%]	0.465
	Steel blue	1[2.0%]	1[2.0%]	1.000

Table [3]: Antifungal Sensitivity in the Study Groups.

		Non-pregnant	Pregnant	Test Result
		n=50	n=50	
Nystatin sensitivity	Intermediate resistant	1[2.0%]	0[0.0%]	0.857
	Resistant	16[32.0%]	15[30.0%]	0.857
	Sensitive	29[58.0%]	35[70.0%]	0.453
	No growth	*4[8.0%]*	*0[0.0%]*	-
Itraconazole sensitivity	Intermediate resistant	18[36.0%]	15[30.0%]	0.602
	Resistant	25[50.0%]	35[70.0%]	0.197
	Sensitive	3[6.0%]	0[0.0%]	0.083
	No growth	*4[8.0%]*	*0[0.0%]*	-
Fluconazole sensitivity	Intermediate resistant	5[10.0%]	0[0.0%]	0.025*
	Resistant	26[52.0%]	36[72.0%]	0.204
	Sensitive	15[30.0%]	14[28.0%]	0.853
	No growth	*4[8.0%]*	*0[0.0%]*	-

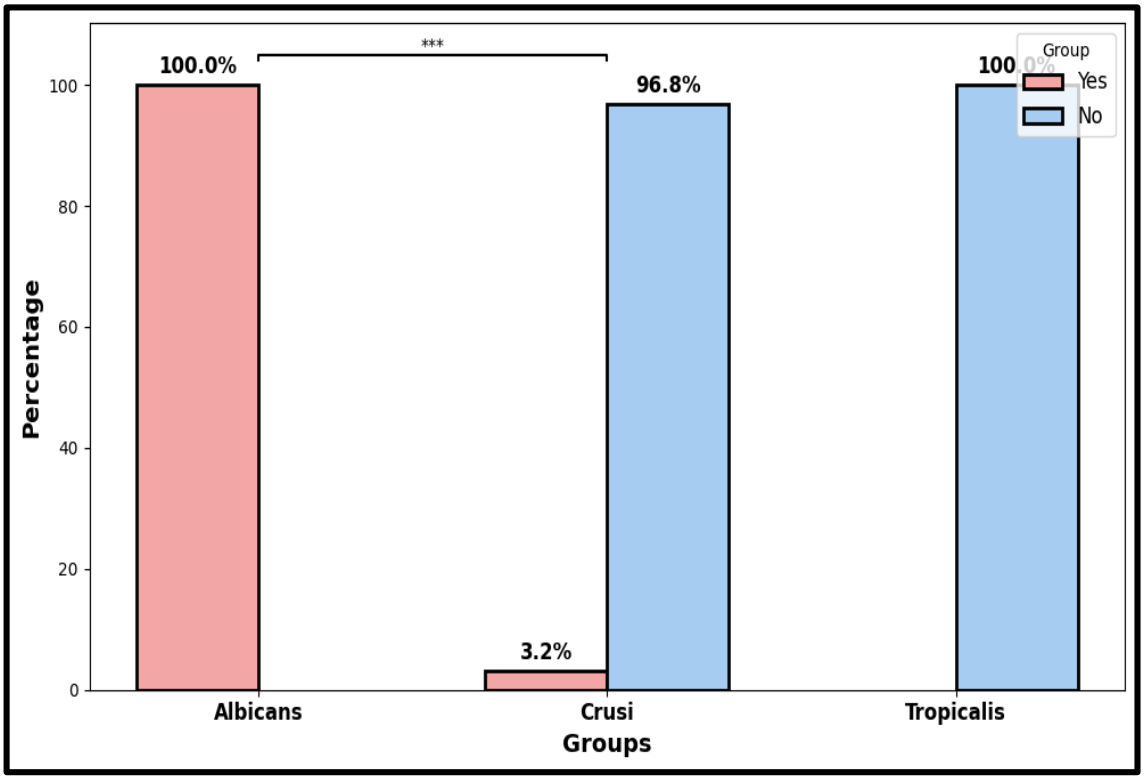

Figure [2]: Production of germ tubes in different candida species.

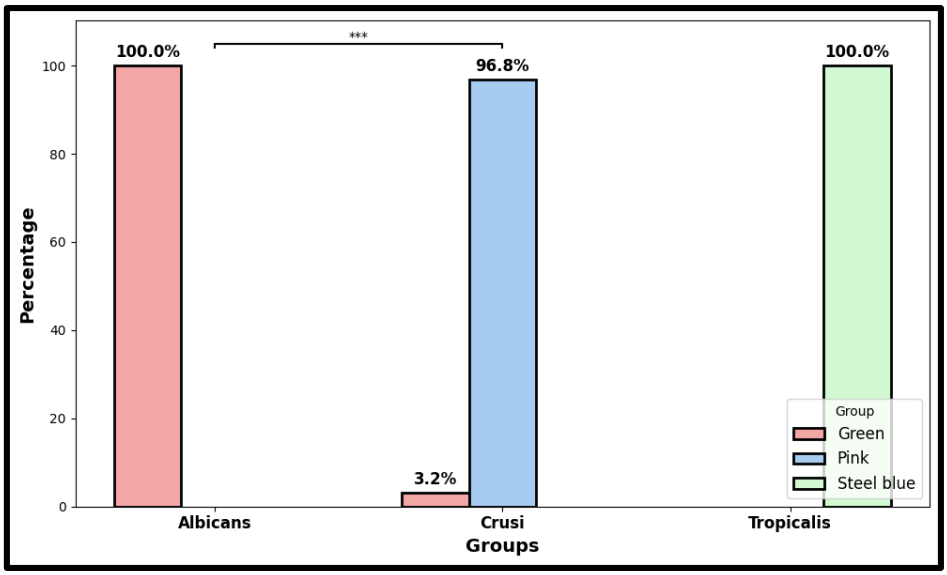

Figure [3]: Culture in CHROM **agar in different *Candida species*.**

Table [4]: Relation between candida species and antifungal sensitivity.

		C. krusei	*C.tropicalis*	*C.albicans*	Test Result
		n=31	n=2	n=63	
Nystatin sensitivity	Intermediate resistant	1[3.2%]	0[0.0%]	0[0.0%]	X2: 83.375, p<0.001*
	Resistant	28[90.3%]	2[100.0%]	1[1.6%]	
	Sensitive	2[6.5%]	0[0.0%]	62[98.4%]	
Itraconazole sensitivity	Intermediate resistant	23[74.2%]	2[100.0%]	8[12.7%]	X2: 49.822, p<0.001*
	Resistant	5[16.1%]	0[0.0%]	55[87.3%]	
	Sensitive	3[9.7%]	0[0.0%]	0[0.0%]	
Fluconazole sensitivity	Intermediate resistant	2[6.5%]	0[0.0%]	3[4.8%]	X2: 74.084, p<0.001*
	Resistant	3[9.7%]	0[0.0%]	59[93.7%]	
	Sensitive	26[83.9%]	2[100.0%]	1[1.6%]	

X2: Chi square test, * for significant value [<0.05]

DISCUSSION

Candidiasis is the most common opportunistic fungal infection, responsible for 90% of infectious vaginitis cases. During pregnancy, increased levels of reproductive hormones like progesterone and estrogen create an environment that promotes its growth. Progesterone weakens the immune system by reducing the ability of neutrophils to fight *Candida*, while estrogen makes it harder for vaginal cells to control *C. albicans* and lowers protective antibody levels in vaginal secretions. As a result, pregnant women are more vulnerable to developing vaginitis[15].

In this study, a significant difference in the age distribution between isolates from pregnant and non-pregnant women, with a higher percentage of younger women [18-25 years] in the pregnant group [28%] compared to the non-pregnant group [14%]. In contrast, a higher proportion of women aged 36-45 were non-pregnant. In terms of residence, there was no significant difference between the groups, with the majority of participants in both groups were from rural areas. Additionally, most of the pregnant women were in their first trimester [54%], followed by the second trimester [32%], with fewer women in their third trimester [14%].

Ali *et al.* who investigated 396 pregnant women, reported that 32.3% of the participants in their study were between the ages of 24 and 30 years, where 70.5% of them were from urban areas, 45.5% were in the third trimester, and 52.3% were primigravida [16].

Maftei *et al.* on their study on 663 pregnant women, documented that vaginal candidiasis was most frequently observed in the first trimester of pregnancy [53.57%] and became less common in the third trimester [17.14%] [17].

Maraki *et al.* reported that women aged 18 to 29 showed the highest occurrence of vulvovaginal candidiasis at 13.9%. In comparison, the prevalence rates declined with increasing age: 12.3% for those aged 30-39, 11.3% for 40-49, 6.5% for 50-59, and 5.9% for individuals aged 60 and above [18].

The variation in trimester distribution across studies may also highlight how timing in pregnancy can influence exposure and responses to infections like candidiasis. The trimester findings are particularly relevant as they highlight the need for heightened surveillance and preventive education in early pregnancy, when women may be more susceptible to infections due to hormonal changes.

This study also showed no significant differences between isolates from pregnant and non-pregnant women in terms of erythema [50%] and [58%] in non-pregnant and pregnant women, respectively. Odour [60%] and [64%] in non-pregnant and pregnant women, respectively.

Dyspareunia [98%] and [100%] in non-pregnant and pregnant women, respectively. Pruritus [98%] and [100 %] in non-pregnant and pregnant women, respectively. Burning sensation [74%] and [70 %] in non-pregnant and pregnant women, respectively. Dysuria [88%] and [92 %] in non-pregnant and pregnant women respectively, or history of abortion [24%] and [16%] in non-pregnant and pregnant women respectively. Again, a positive association has been found between having clinical manifestations and vaginal candidiasis as both groups exhibited a high prevalence of symptoms such as pruritus and dyspareunia, with nearly all women reporting these conditions. Variable results of vaginal symptomatology associated with candida infections was detected by other studies. **Yano *et al.*** found that the most common clinical characteristics were associated with itching [91.2%], followed by burning [68.3%]. Additional common features of symptomatic VVC episodes included erythema [58.1%], vaginal discharge described as thick, white or cottage cheese-like [55.6%], dysparunia [40.5%], vaginal pain [38.1%] and vaginal dryness [29.3%] [19]. **Rathod *et al.*** revealed that a significant number of women experienced symptoms such as vaginal itching [29%] and vaginal discharge [31%]. During clinical examinations, findings included vaginal erythema in 9% of cases and observable vaginal discharge in 35% of participants [20].

Overall, the results indicate that while vaginal candidiasis presents with a common set of symptoms such as itching and dyspareunia, these symptoms are largely consistent across pregnant and non-pregnant women. This consistency aligns with findings from **Yano *et al.*** [19] and, to a lesser extent, **Rathod *et al.*** [20]**.** The current study reinforces the utility of symptom-based diagnosis but suggests that more universal risk factors, rather than pregnancy-specific factors, may shape symptom expression in candidiasis.

In our study, there was no significant difference in the distribution of *C. albicans* recovered from the pregnant and non-pregnant women [27; 54%] and [36; 72%] [p=0.257]. *C. krusei* [18; 36%] and [16; 26%] in non-pregnant and pregnant women [p=0.369]. However, *C. tropicalis* was recovered in only 1; 2%] and 1 [2%] of each pregnant and non-pregnant woman. No growth was detected in the non-pregnant group more than the pregnant group [4; 8%], Germ tube formation was detected, with similar rates in both groups [28; 56%] and [36; 72%] in non-pregnant and pregnant women, respectively. Similarly, the chrome agar culture results did not show significant differences between both groups, while *C. albicans* produced mostly green colonies in both groups [p=0.317] [27; 54%] and [36; 72%] in non-pregnant and pregnant women, respectively, and the carbohydrate assimilation test using RapID yeast plus system showed similar results as chrome agar.

The study of **Ahaik *et al.*** revealed that 58% of the isolated *Candida* species were germ tube-positive, while the remaining 42% were germ tube-negative. Based on these findings and the widely accepted understanding that *C. albicans* is the primary germ tube-forming *Candida* species, it was concluded that *C. albicans* was the most prevalent species in the sample [21]. However, **Ohale *et al.*** detected the germ-tube profile in 10 out of the 26 isolates examined [22]. But, **Ameen *et al.*** found that, based on the germ tube test, 67% of the positive samples were classified as either *C. albicans* or *C. dubliniensis* [23].

Using the CHROMagar method, 60 samples were identified as *C. albicans*, 29 samples as *C. glabrata*, and one sample as *C. tropicalis*. Similarly, the API 20 AUX System confirmed the same distribution, with 60 samples classified as *C. albicans*, 29 as *C. glabrata*, and one as *C. tropicalis*. The CHROMagar results also showed no significant differences in colony color patterns between pregnant and non-pregnant women. *C. albicans* predominantly produced green colonies in both groups, as expected, while other Candida species, such as *C. glabrata* and *C. tropicalis*, were less commonly detected. The consistency between the CHROMagar and germ tube results further support the reliability of these methods in identifying *C. albicans* and highlights the limited impact of pregnancy on Candida species identification.

In this study, there was no significant difference between pregnant and non-pregnant women in the sensitivity to nystatin as both groups had similar rates of resistance, with most isolates being sensitive to nystatin 58% in non-pregnant and 70% in pregnant women. However, a higher percentage of pregnant women were resistant [70%] to itraconazole as compared to non-pregnant women [50%] with no statistical difference. 10% of the non-pregnant women were intermediately resistant to fluconazole, while none of the pregnant women exhibited this resistance. **Ohale *et al.*** reported that *Candida species* was sensitive to nystatin in 17 patients [41.5%] and demonstrated resistance in 19 patients [46.3%] with vaginal candidiasis. Similarly, *Candida* species was sensitive to fluconazole, in 10 patients [24.3%], and showed resistance in 18 patients [43.9%] with vaginal candidiasis [22]**. Bitew and Abebaw** reported that fluconazole was the most effective antifungal medication. In the current study, a significant difference has been found across species for sensitivity to nystatin, itraconazole, and fluconazole [p<0.001]. *C. albicans* showed a high level of sensitivity [98.4%] to nystatin, while *C. krusei* and *C. tropicalis* displayed much higher resistance to nystatin [90.3% and 100%, respectively]. *C. albicans* showed a higher resistance [87.3%] to itraconazole. In contrast *C. krusei* and *C. tropicalis* isolates were intermediate resistant to itraconazole **[**74.2%]. Again, *C. albicans* was highly resistant to fluconazole [93.7%]. However, the greater part of *C. krusei* isolates [83.9%] were sensitive to fluconazole, whereas *C. tropicalis* showed 100% sensitivity to fluconazole [24]. Furthermore, **Ali *et al.*** reported that the isolated *C. krusei, C. tropicalis, C. glabrata*, and *C. dublinensis* in this finding were resistant to fluconazole [57.6%], voriconazole [63%], voriconazole [43.8%], and nystatin [60%], respectively [16].

A report by **Luo *et al.*** found that the resistance levels of *C. albicans, C. glabrata, and C. tropicalis* to amphotericin B, voriconazole, fluconazole, 5-fluorocytosine, and itraconazole were found to be 0.5% to 6.4%, 0% to 7.7%, and 0% to 9.6%, respectively. Furthermore, itraconazole [24.1%] and posaconazole [14.5%] were the only two drugs showing resistance to *C. glabrata* [25], while *C. krusei* demonstrated the highest resistance to itraconazole at 81.5% [26]. **Maftei *et al.*** reported the antifungal susceptibility testing results for two drugs, Nystatin and Fluconazole. Their findings indicate that *C. albicans* exhibited 42.4% sensitivity and 57.6% resistance to Nystatin, while *C. krusei* was 100% resistant to this drug. In contrast, *C. albicans* showed 91.5% sensitivity and 8.5% resistance to fluconazole, whereas *C. krusei* demonstrated 33.3% sensitivity and 66.7% resistance to the same antifungal agent [17].

According to **Gualco *et al.*,** *C. albicans* exhibited resistance to fluconazole and itraconazole at rates of 0.7% and 2.7%, respectively [27]**.** No notable variations in antifungal resistance were found when comparing pregnant and non-pregnant women, there were notable species-specific variations in sensitivity to nystatin, itraconazole, and fluconazole. These results underline the need for targeted antifungal therapies based on the species involved, as resistance patterns can differ significantly between *Candida* species. Differences in the study populations, geographic locations, and antifungal usage practices may help explain the variability in resistance rates found in our investigation.

Conclusion: The results of this study indicate that vaginal candidiasis is more prevalent among pregnant women due to hormonal changes, particularly increased levels of oestrogen, which create an environment conducive to *Candida* overgrowth. Pregnant women often experience more severe symptoms, with a higher rate of recurrent infections. This study also highlights the importance of early diagnosis and tailored treatment approaches to reduce complications, especially during pregnancy. The high prevalence of *Candida species* isolates poses a significant health concern for both pregnant and non-pregnant women, with *C. albicans* remaining the most identified species.

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