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### RESEARCH ARTICLE

## PREVALENCE ESTIMATES OF VAGINAL CANDIDIASIS IN NORTHERN AND WESTERN REGIONS, SAUDI ARABIA WITH REFERENCE TO DIABETES MELLITUS RELATION

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### Manuscript Info

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#### Key words:-

Vaginal Candidiasis, Vulvovaginitis, Diabetes Mellitus

### Abstract

**Objective:** To identify and determine the prevalence, frequency and factors that cause vaginal Candidiasis among women and how that related to diabetes mellitus in some cases.

**Methods:** Cross-sectional- analytic study was conducted from September 2019 till March 2020 at Hail and Almandine regions, KSA, using questionnaire. statistical analysis was carried out by SPSS 22.

**Results:** The study finding showed that (41,3%) from participants were(30-40y), (34,4%) from(40-50y), (18.3%) from (20-30 y) and (5%) from(50-60y). As for the symptoms accompanied by vaginitis and vulvovaginal Candidiasis, the study found that (68%) of the participants suffering from abdominal pain, constipation, diarrhea, bloating. Other signs like vaginal odor (44%) white thick discharge from the vagina were very high (72.8%) of female participants. (45%)44 felt itching and burning sensation and for pain during sex showed (32.9%) and with bleeding (6.6%). As factors that help repeat infection, prolonged courses of antibacterial drugs by (11%) of the responders while the use of vaginal douching increase the incidence of infection by (56.3%) and diabetes mellitus was the major factor which plays a role in incidence and recurrence of infection by (40.4%).

**Conclusion:** Spreading awareness among women about the factors cause recurrence of vaginal Candidiasis can help control and prevention of such conditions, for diabetic patients more measurement should be taken to control recurrence and health care providers should educate women about risk factors.

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### Introduction:-

Vaginitis is one of the major problems facing women. The common cause of the condition is by infection with yeast (Curry et al.1994).Candida Spp., are one of pathogens associated with these condition and Candida albicans is the mostly isolated one. women with diabetes suffering from fungal vaginitis and vulvovaginitis and the intensity of condition is more sever, resistant and recurrent are common (Wilson et al.1987). The aim of this study is to determine the prevalence of Candida vaginitis among women with special reference to diabetic cases in Hail and Al Medina regions, Saudi Arabia from September 2019 till March 2020.

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## Material and Methods:-

### Study Design:

Cross sectional -surveillance study

### Study population:

Women / all age/married or not married/diabetic or not

### Study strategies:

A standardized questionnaire was distributed to all women aged from 18 and above.

### Study sampling:

A total of 334 participated in this study.

### Data collection:

Data was collected by using standardized questionnaire via social media, email and hard copies.

### Analysis of data:

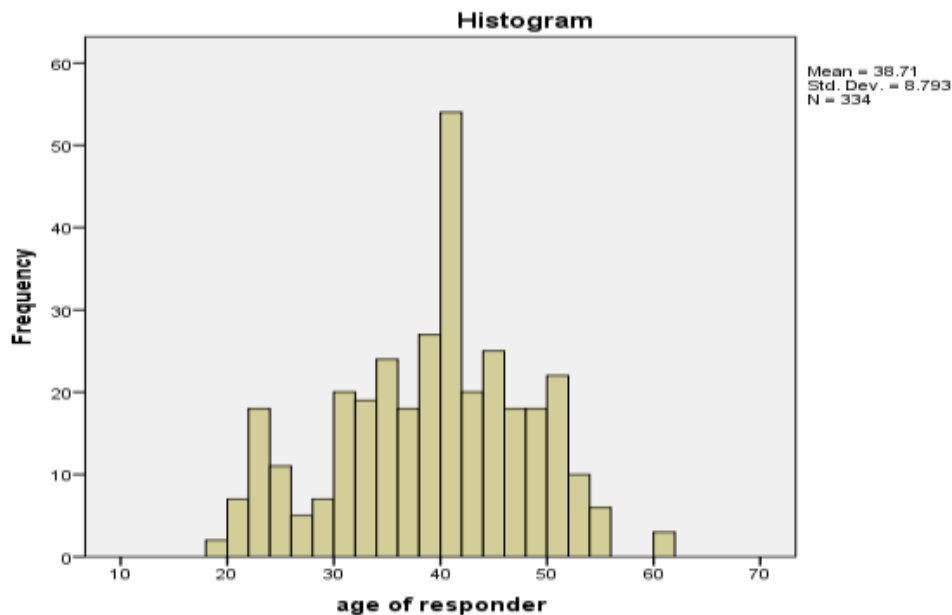
Data was analyzed using Statistical Package for Social Sciences (SPSS) program 22 and Microsoft Excel-97 software.

### Ethical consideration:

Informed Consent was addressed during this study.

## Results:-

Regarding participant profile, the study finding showed that (41,3%)from participants were(30-40y),(34,4%)from(40-50y),(18.3%) from (20-30 y) and(5%) from(50-60y). (Fig.,1) It observed that most of responders were married (85%), and only (15%) were single. (Table 1).



**Table 1:-** Marital status of responder.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
married	284	85.0	85.0	85.0
single	50	15.0	15.0	100.0
Total	334	100.0	100.0	

As for the symptoms accompanied vaginitis and vulvovaginal candidiasis the study found that (68%) of the participants suffering from abdominal pain, constipation, diarrhea, bloating while (32%) have no signs. Other signs like vaginal odor (44%) white thick discharge from vagina where very high (72.8%) of females and (27.2%) with no discharge (56%) no odor. (45%) felt itching and burning sensation while (54%) with no burning sensation. For pain during sex showed (32.9%) and with bleeding (6.6%) (Table 2).

**Table 2:-** Symptoms accompanied vaginitis.

<b>1-Do you suffer with constipation, diarrhea, bloating or abdominal pain</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	227	68.0	68.0	68.0
no	107	32.0	32.0	100.0
Total	334	100.0	100.0	
<b>2-Do you notice a white thick discharge from your vagina</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	243	72.8	72.8	72.8
no	91	27.2	27.2	100.0
Total	334	100.0	100.0	
<b>3-During the past week, have you been bothered by: Itching or burning sensation in your Vagina</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	151	45.2	45.2	45.2
no	183	54.8	54.8	100.0
Total	334	100.0	100.0	
<b>4-Your vulvovaginal symptoms causing pain during sexual activity</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	110	32.9	32.9	32.9
no	224	67.1	67.1	100.0
Total	334	100.0	100.0	
<b>5-Your vulvovaginal symptoms causing bleeding during sexual activity</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	22	6.6	6.6	6.6
no	312	93.4	93.4	100.0
Total	334	100.0	100.0	
<b>6-Odor from your Vagina</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	147	44.0	44.0	44.0
no	187	56.0	56.0	100.0
Total	334	100.0	100.0	

Regarding factors that can cause vaginitis and frequency of infection, the results showed that wear nylon or synthetic pantyhose or underwear which make the vaginal area not dry and not well aired by (22%) and prolonged courses of antibacterial drugs by (11%) of the responders while the use of vaginal douching increase the incidence of infection by (56.3%). Diabetes one of the major factors which play a role in incidence and recurrence of infection by (40.4%). (Table 3).

**Table 3:-** Factors help in inducing infection and increase frequency .

<b>1-Do you wear nylon or synthetic pantyhose or underwear</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent

yes	74	22.2	22.2	22.2
no	260	77.8	77.8	100.0
Total	334	100.0	100.0	
<b>2- Have you taken repeated or prolonged courses of antibacterial drugs</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	37	11.1	11.1	11.1
no	297	88.9	88.9	100.0
Total	334	100.0	100.0	
<b>3- Vagina douching</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	188	56.3	56.3	56.0
no	146	43.7	43.7.0	100.0
Total	334	100.0	100.0	
<b>4- Diabetic patient</b>				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
yes	135	40.4	40.4	40.4
no	199	59.6	59.6	100.0
Total	334	100.0	100.0	

### Discussion:-

Self-hygiene associated infections specially in women are very important issue globally. Vaginal Candidiasis is an irritated infection specially when it recurrently happened, the factors that help the recurrence is varies depend on persons habits such using nylon underwear and daily routine. In agreement with (Moraes et al 1998) as he reported that Personal hygiene is an important factor helps in prevent recurrence of infection and successful treatment, also he believes that preventing and controlling of background factors concedes major steps in successful treatment. As in the presence study results showed that vaginal douching plays a role in increasing the incidence of recurrence (Hacioglu et al and Sen et al 2009) also reported that vaginal douching (VD) as traditional practice changes the PH of the vagina which affect the vaginal mucosal immune response leading to repetitive infection. (Scudamore et al 1992) reported that Diabetes mellitus has long been considered as one of the factors causing Candida vaginitis that also highly agreed with this study results but should be more investigation on the type of diabetes mellitus and how it can affect the recurrence as mentioned by (De Leo et al 2002) that Type 1 and type 2 diabetes specially type 2 can be a risk factor for vaginal Candida colonization in women also (Bohannon et al 1998) stated that the basic problem of vulvovaginitis in women with uncontrolled blood glucose levels and the control of blood glucose level with suitable antifungal treatment play important role in controlling vaginal Candida infection on diabetic women. One of the complications experienced by women who have diabetes is Candida vaginitis some believes that condition caused by malfunctioning leucocytes with those with uncontrolled blood glucose levels reported by (Raithel et al 1983). Fungal vaginitis is more disturbing in sever hyperglycemic conditions founded by (Chaponis et al 1993). Ozra et al 2007) believes that causes of recurrence were due to false diagnosis of pathogenic organism but on the other hand different from (Forster et al 1998) who mentioned that even when correct diagnosis had been made background factors especially those who have diabetes can cause treatment failure. Other important factors as the presence study finding is Antibiotic use, which is a short-term risk factor for symptomatic vulvovaginal candidiasis, either as a first episode or in the form of recurrence. Increasing duration of antibiotic use is directly related with an increased prevalence of Candida vaginal infection as mentioned by (Spinillo et al 1999). In accordance with the findings of the present study, the prevalence Candida vaginitis high among women who delayed diagnosis and treatment can lead to poor patient outcomes and high medical costs. The overall burden of fungal diseases is challenging to quantify, because they are likely substantially underdiagnosed as agreed with (Benedict et al 2019).

### Conclusion:-

In conclusion spread awareness among women about the factors cause recurrence of Candida infection of the vagina, can help control and prevention of such conditions, for diabetic patients more measurement should be taken to control recurrence and health care providers should educate women about risk factors.

**Recommendation:-**

One investigation has to be done especially the relation between diabetic patients and vaginal Candidiasis to know more about which type of diabetes help more in recurrence, the Candida infection type Albicans and non albicans and frequency of vaginal douching, which help in given the specific treatment to prevent and control recurrence.

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