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The study of personal practices of women as risk factors of vaginitis in Baghdad City, Iraq

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Abstract---Background: Vaginitis risk factors include vulvar occlusion and moisture accumulation brought on by the use of sanitary napkins, synthetic underwear, and/or tight jeans. Patients and Methods: A case-control study conducted on 100 patients women with vaginitis and 100 in the control group attending Kadhimiya Teaching Hospital and Medical City. The study used a convenience sampling technique (non-random sampling technique) to choose the patients with vaginitis and control groups via take swab vaginal and direct interviews. The data were collected during a period from the 1st of December 2021 to the end of May 2022. Results: The result explained that ages ≥ 50 years, and single, and menopausal women are more frequency in the control group compared to the study group. While reveals that the participants women who use not wipe with soft tissue, and soap and water are less likely for vaginitis than those who use it (OR; 0.278, and 0.488) respectively. In contrast, the participant's women who use not clean with water are more likely for vaginitis than those who use it (B= 1.509; P. value<0.001; OR= 4.524; 95% C.I = 2.225-9.198). Conclusion: The study revealed old age, single women, and menopausal are significantly associated with a reduced risk of Vaginitis. In contrast, vaginal douches, wearing damp clothing, high carbohydrate diet, irregular diet, and wipe with soft tissue, and soap are significantly associated with an increased risk of Vaginitis.

Keywords---vaginitis, sedentary, pads, vulvovaginal candidiasis.

Introduction

The sanitary pad is the most common source of worry for women because it can change the pH of the vulvar or vagina and raise local temperatures when it comes into contact with the vulva. These physiological changes can make it easier for vaginal infections like vulvovaginal candidiasis (VC) to develop (1). (2) conducted a research with 58 women who had worn plastic-covered, non-breathable sanitary napkins for three menstrual cycles between flow days (panty liners). Similar to sanitary pads, clothes may modify the vaginal microbiome owing to humidity and temperature fluctuations, altering the genital ecology and resulting in irritations, allergies, or discharge (1).

Because of its shape, occlusion, moisture, and susceptibility to friction, vulvar epithelial tissue varies from other body parts, yet like other epithelial tissues, it serves to defend the organism through defense cells (3). The skin barrier may be negatively impacted by excessive occlusion and humidity in the vulva area brought on by synthetic underwear, tight pants, menstruation, and the use of sanitary pads, which can also change the temperature and pH of the area, making the vulva vulnerable to vulvovaginal diseases (4) (1). Bacterial vaginitis (BV) and vulvovaginal candidiasis (VC), the most prevalent kinds of vulvovaginitis in women of reproductive age, respectively, often present as vaginal discharge accompanied by a poor odor and itching (2).

Patients and Methods

1. Design of the study: A case-control study was conducted on 100 patients women with vaginitis and 100 in the control group.
2. Setting of the Study: The study was conducted in Kadhimiya Teaching Hospital and Medical City In the Iraqi capital, Baghdad governorate.
3. Sampling technique: The study used convenient sampling (a non-random sampling technique) to choose the case and control groups via take swab vaginal and direct interviews.
4. Method of data collection: A non-lubricated speculum was placed into the vaginal canal to collect discharge with a high vaginal swab. Sterilized cotton-tipped swabs were used to collect vaginal samples from the lateral and posterior vaginal fornix. The swabs were sent to the Microbiology Laboratory in a sterile sealed test tube. Where we get the result after three days from the date of delivery of the swab to the laboratory. Subjects were interviewed using a structured questionnaire include domains four these are 1) socio-demographic characteristics; 2) Hygienic practice; 3) Diet habit; 4) 4. Underwear information; 5) Use of hygiene products.
5. Statistical Analysis: The data for each questionnaire was encoded and entered into an excel sheet before in being transferred to the Statistical Packages for Social Sciences (SPSS)-26 Version. Extract data in the form of statistical tables consisting of frequencies, percentages, means, standard deviations, and ranges (minimum and maximum values). Statistical significance was taken into account when the P-value was equal to or less than 0.05. The significance of difference for different percentages (Qualitative data) were tested using Pearson Chi-square test (X²-test).

Univariate logistic regression analysis was used to identify the risk factors associated with Vaginitis.

Result

Socio-demographic Characteristics

The demographic characteristics of patients are shown in table 1. The table found that the highest percentage of patients in the age group 30-39 years 44 (44.0%). As for residence, the study reveals that the highest percentage of 78 (78.0%) of patients live in urban areas. Regarding marital status, it sets that a distinct married preponderance of 94 (94.0%). Whereas the highest percentage 32 (32.0%) of patients have primary school certificates. Regarding occupation, a high percentage of 92 (92.0%) of the patients were unemployed. As for the type of house, the results found that half of the patients (50.0%) have owned house. The same table showed that there is no significant association between the patients with vaginitis and the control group according to demographic characteristics (P. value >0.05), except for age groups, and marital status, women state at a significant level of <0.05. This explained that ages ≥ 50 years, and single, and menopausal women are more frequency in the control group compared to the study group.

Table (1) The distribution of socio-demographic characteristics of patients with Vaginitis and control group

					P. value
			Control	Case	
Age groups per years	<20 year	No.	12	6	0.001*
		%	12.0%	6.0%	
	20-29 year	No.	30	26	
		%	30.0%	26.0%	
	30-39 year	No.	22	44	
		%	22.0%	44.0%	
	40-49 year	No.	28	24	
		%	28.0%	24.0%	
	≥ 50 year	No.	8	0	
		%	8.0%	0.0%	
Residence	Urban	No.	76	78	0.737
		%	76.0%	78.0%	
	Rural	No.	24	22	
		%	24.0%	22.0%	
Marital status	Married	No.	84	94	0.019*
		%	84.0%	94.0%	
	Single	No.	10	2	
		%	10.0%	2.0%	
	Divorced	No.	6	2	
		%	6.0%	2.0%	
	Widow	No.	0	2	
		%	0.0%	2.0%	
Education level	Illiterate	No.	8	6	0.252

Total Response		No	110	140
			Control	Case
Hygienic practices after toilet	clean with water	No.	72	68
		%	60.0%	52.3%
	soap and water	No.	30	40
		%	25.0%	30.8%
	medical wash	No.	14	12
		%	11.7%	9.2%
	salt and water	No.	4	8
		%	3.3%	6.2%
	sodium and water	No.	0	2
		%	0.0%	1.5%
Total Response		No.	120	130

Table 3 reveals that the participants women who use not wipe with soft tissue, and soap and water are less likely for vaginitis than those who use it (OR; 0.278, and 0.488) respectively. In contrast, the participant's women who use not clean with water are more likely for vaginitis than those who use it (B= 1.509; P. value<0.001; OR= 4.524; 95% C.I = 2.225-9.198). As for other cleaning products, the study found that there is no significant association between the remaining cleaning products with vaginitis (P. value>0.05).

Table (3) Univariate Logistic Regression analysis to identify risk practices before/after intercourse, and after toilet associated with Vaginitis

			B	P. value	OR	95% C.I. for OR	
						Lower	Upper
wipe with soft tissue	Yes	No	Reference				
clean with water	Yes	No	-1.281-	<0.001	0.278	0.148	0.523
sodium and water	Yes	No	Reference				
soap and water	Yes	No	1.509	<0.001	4.524	2.225	9.198
use medical wash	Yes	No	Reference				
salt and water	Yes	No	-0.646-	0.307	0.524	0.152	1.808
	Yes	No	Reference				
	Yes	No	-0.717-	0.031	0.488	0.255	0.936
	Yes	No	Reference				
	Yes	No	0.159	0.630	1.172	0.614	2.238
	Yes	No	Reference				
	Yes	No	-21.134-	0.999	0.000	0.000	.
			B	P. value	OR	95% C.I. for OR	
						Lower	Upper
clean with water	Yes	No	Reference				
soap and water	Yes	No	0.191	0.537	1.210	0.660	2.218
medical wash	Yes	No	Reference				
salt and water	Yes	No	-0.442-	0.139	0.643	0.358	1.155
	Yes	No	Reference				
	Yes	No	0.177	0.674	1.194	0.522	2.728
	Yes	No	Reference				
	Yes	No	-0.736-	0.243	0.479	0.140	1.646

sodium and water	Yes No	Reference -21.223-	0.999	0.000	0.000	.
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Diet habit

Table 4 represents the distribution of patients with Vaginitis and the control group according to diet habits. The results of this study indicate that the highest percentage (94.0%, and 66.0%) of the patients and control group have no regular diet respectively. All the participants (100.0%) of the patients and control group have not followed a strict diet. A high percentage (89.0%, and 82.0%) of the patients and control group reported eating junk food twice per week. While a large number (98.0%, and 82.0%) of the patients and control group have not taken vitamin-D supplements respectively. As for the consumption of a high carbohydrate diet, the results found that 98.0% of the patients consumed of high carbohydrate diet, in contrast, to 76.0% of the control group.

Table (4) The distribution of patients with Vaginitis and control group according to Diet habit

Diet habit				
			Control	Case
Regular diet	Yes	No.	34	6
		%	34.0%	6.0%
	No	No.	66	94
		%	66.0%	94.0%
Follow strict diet	Yes	No.	-	-
		%	-	-
	No	No.	100	100
		%	100.0%	100.0%
Eating junk food	Once per week	No.	13	1
		%	13.0%	1.0%
	Twice per week	No.	82	89
		%	82.0%	89.0%
	Daily	No.	5	10
		%	5.0%	10.0%
V.D supplement	Yes	No.	18	2
		%	18.0%	2.0%
	No	No.	82	98
		%	82.0%	98.0%
High carbohydrate diet	Yes	No.	76	98
		%	76.0%	98.0%
	No	No.	24	2
		%	24.0%	2.0%

Table 5 shows that the participants women whose not followed a regular diet are more likely for vaginitis at 8.071 times than those who follow a regular diet. Regarding eating junk food, the results found the participant women who eat junk food daily are more likely for vaginitis by 26 times than those who eat it once per week. While the participants women whose not taken vitamin-D supplements are more likely for vaginitis by 10.756 times than those who take vitamin-D

supplements. As for the consumption of a high carbohydrate diet, the study reveal that the participant's women whose not consumed are less likely for vaginitis than those who consumed a high carbohydrate diet (B= -2.739-; P. value<0.001; OR= 0.065; 95% C.I = 0.015-0.282).

Table (5) Univariate Logistic Regression analysis to identify Diet habit associated with Vaginitis

Diet habit		B	P. value	OR	95% C.I. for OR	
					Lower	Upper
Regular diet	Yes	Reference				
	No	2.088	<0.001	8.071	3.206	20.317
Eating junk food	Once per week	Reference				
	Twice per week	2.647	0.012	14.110	1.806	110.258
	Daily	3.258	0.005	26.000	2.607	259.295
V.D supplement	Yes	Reference				
	No	2.375	0.002	10.756	2.424	47.727
High carbohydrate diet	Yes	Reference				
	No	-2.739-	<0.001	0.065	0.015	0.282

Underwear information

Table 6 shows that A high percentage (88.0%, and 96.0%) of the patients and control groups did not wear damp clothing. Regarding wearing tight clothing, the results found that the highest percentage 76 (76.0%) of the patients vs. 66 (66.0%) of the control group did not wear tight clothing. Whereas the highest percentage (70.0%, and 76.0%) of the patients and control groups wear nylon underwear respectively. As for the number of underwear exchanges per day, the results found that 84.0% of patients vs. 86.0% of the control group were underwear exchanged less or equal to two times per day.

Table (6) The distribution of patients with Vaginitis and control group according to Underwear information

			Control	Case
Wearing damp clothing	Yes	No.	4	12
		%	4.0%	12.0%
	No	No.	96	88
		%	96.0%	88.0%
Tight clothing	Yes	No.	34	24
		%	34.0%	24.0%
	No	No.	66	76
		%	66.0%	76.0%
Wearing nylon underwear	Yes	No.	76	70
		%	76.0%	70.0%
	No	No.	24	30
		%	24.0%	30.0%

No. of underwear exchange per day	<=2 times	No. 86	84
		% 86.0%	84.0%
	>2 times	No. 14	16
		% 14.0%	16.0%

Table 7 reveals that there is no significant association between underwear and vaginitis (P. value >0.05), except wearing damp clothing has a significant association with vaginitis (P. value <0.05). The study found that the participants women who did not wear damp clothing are less likely for vaginitis than those who wear it (B= -1.186-; P. value=0.047; OR= 3.273; 95% C.I = 1.018-10.523).

Table (7) Univariate Logistic Regression analysis to identify Underwear associated with Vaginitis

			B	P. value	OR	95% C.I. for OR	
						Lower	Upper
Wearing damp clothing	Yes		Reference				
	No		-1.186-	0.047	3.273	1.018	10.523
Tight clothing	Yes		Reference				
	No		0.489	0.121	1.631	0.879	3.026
wearing nylon underwear	Yes		Reference				
	No		0.305	0.340	1.357	0.725	2.541
No. of underwear exchange per day	<=2		Reference				
	>2		0.157	0.692	1.170	0.538	2.547

Use of hygiene products

Table 8 reveals that there is no significant association between hygiene products and vaginitis (P. value >0.05), except vaginal douches have a significant association with vaginitis (P. value <0.05). The study found that the participants women who did not use vaginal douches are less likely for vaginitis than those who use it (B= -1.186-; P. value=0.047; OR= 3.273; 95% C.I = 1.018-10.523).

Table (8) The distribution and identify of patients with Vaginitis and control group according to use of hygiene products

hygiene products					Univariate Logistic Regression		
			Control	Case	B	P. value	OR (95% C.I)
Vaginal douches	Yes	No. 4	12		Reference		
		% 4.0%	12.0%				
	No	No. 96	88		-1.186-	0.047	3.273 (1.018-10.523)
		% 96.0%	88.0%				
Bubble bath	Yes	No. 30	24		Reference		
		% 30.0%	24.0%				
	No	No. 70	76		0.305	0.340	1.357 (0.725-2.541)
		% 70.0%	76.0%				

Vaginal spray	Yes	No.	-	-	-	NS	-
		%	-	-			
	No	No.	100	100			
		%	50.0%	50.0%			
Vaginal deodorant	Yes	No.	-	-	-	NS	-
		%	-	-			
	No	No.	100	100			
		%	50.0%	50.0%			

Discussion

The study found that old age are less frequency in patients compared to the control group. These results agreed with (5), who reported that The risk of BV in younger women may be explained by the higher frequency of unprotected sexual intercourse between newly married adolescents and young women, which can affect the vaginal environment in a way that increases the likelihood of BV infection.

The study reveals that the participants women who use not clean with water are more likely for vaginitis than those who use it (B= 1.509; P. value<0.001; OR= 4.524; 95% C.I = 2.225-9.198). These results agreed with the study findings conducted in Brazil (6), which indicated that women with vaginitis (VV) used more antibacterial soap for daily genital hygiene (p<0.0001). In contrast, the participant's women who use not wipe with soft tissue, and soap and water are less likely for vaginitis than those who use it (OR; 0.278, and 0.488) respectively. Inadequate genital hygiene is defined as a lack of or excess of cleanliness that causes genital homeostasis to be disrupted, and a lack of knowledge about these hygiene practices negatively impacts female genital health, encouraging the establishment of VV. Soaps, despite their widespread usage for reasons of cost, tradition, or convenience of use, include components that can breakdown fat, as well as a neutral/alkaline pH that, when used in the genital area on a regular basis, can result in undesirable outcomes such as dryness and reduced skin acidity (different from the physiological skin-acid pH) (7). Some vaginal products, such as antibacterial soaps, can kill *Lactobacillus* bacteria and change the vaginal environment, therefore they should be used with caution (8). Whereas (Fethers et al., 2008; Vaca et al., 2010) (9) (10), reported that the use of hygiene items that can alter the vaginal ecology.

The study shows that the participants women whose not followed a regular healthy diet are more likely for vaginitis at 8.071 times than those who follow a regular diet. Regarding eating junk food, the results found the participant women who eat junk food daily are more likely for vaginitis by 26 times than those who eat it once per week. Also, the study reveal that the participant's women whose not consumed are less likely for vaginitis than those who consumed a high carbohydrate diet (B= -2.739-; P. value<0.001; OR= 0.065; 95% C.I = 0.015-0.282). These results are consistent with (11) which found that increased risk for *Candida* vulvovaginitis was observed for carbohydrate intake (OR = 1.65). While the participants women whose not taken vitamin-D supplements are more likely for vaginitis by 10.756 times than those who take vitamin-D supplements. These findings are in line with those of (12), who discovered an association between

vitamin D deficiency and vaginitis in a single case report, as well as the resolution of vaginal discharge when the circulating vitamin D concentration returned to the reference range, albeit at higher concentrations than the reference range. This might explain why low vitamin D levels cause epithelium desquamation, subsequent inflammation, and infection.

The study found that the participants women who did not wear damp clothing are less likely for vaginitis than those who wear it ($B = -1.186$; P . value=0.047; $OR = 3.273$; 95% C.I = 1.018-10.523). These results are consistent with the study findings done by (13) which found that the usage of synthetic underwear has been linked to an increased risk of vaginitis. Janković et al., (2010) (14) discovered that women who used cotton-lined underwear had a greater incidence of vaginitis than those who did not ($p=0.0001$). A possible explanation for the increased risk of women wearing wet clothes may be due to increased temperature, humidity, and PH compared to women who do not wear wet clothes. The study found that the participants women who did not use vaginal douches are less likely for vaginitis than those who use it ($B = -1.186$; P . value=0.047; $OR = 3.273$; 95% C.I = 1.018-10.523). these results agreed with the study findings conducted by (15), who revealed that vaginal douches have a significant association with vaginitis (P . value <0.05). Also, (16), reported that frequent vaginal douching were risk factors for vaginitis. While these results agreed with (16), which found that frequent vaginal douching were independent risk factors for AV (OR 4.689, 95% CI 1.363-16.135). The possible reason for the association of vaginal douches with the risk of developing vaginitis may be explained by concordance with (17), which reported that Vaginal douching, using fragrant soaps for cleaning, certain laundry detergents, toilet paper, fabric softeners, and other feminine care items that may serve as irritants and induce atypical discharge are all non-infectious causes of vaginal discharge.

Conclusions and Recommendations

The study revealed old age, single women, and menopausal are significantly associated with a reduced risk of Vaginitis. In contrast, vaginal douches, wearing damp clothing, high carbohydrate diet, irregular diet, and wipe with soft tissue, and soap are significantly associated with an increased risk of Vaginitis. Establishing educational programs and seminars in every place that women can be exists starting from primary health care(maternal health care), hospitals, schools, colleges, government department,.....etc that increase women's awareness about risk factors in order to improve healthy life style for her, her daughters and relatives, also to create their thinking about ideal solution for these recurrent problem they suffer.

References

1. Schäfer P, Bewick-Sonntag C, Capri MG, Berardesca E. Physiological changes in skin barrier function in relation to occlusion level, exposure time and climatic conditions. *Skin Pharmacol Physiol*. 2002;15(1):7–19.
2. Runeman B, Rybo G, Larkö O, Faergemann J. The Vulva Skin Microclimate: In. uence of Panty Linerson Temperature, Humidity and pH. *Acta Derm Venereol*. 2003;83(2):88–92.

3. Obstetrícia FB das A de G e. Guia prático de condutas sobre higiene genital feminina. In: Guia prático de condutas sobre higiene genital feminina. 2009. p. 28.
4. Donders GGG, Bosmans E, Dekeersmaeckerb A, Vereecken A, Van Bulck B, Spitz B. Pathogenesis of abnormal vaginal bacterial flora. *Am J Obstet Gynecol.* 2000;182(4):872–8.
5. Vallor AC, Antonio MAD, Hawes SE, Hillier SL. Factors associated with acquisition of, or persistent colonization by, vaginal lactobacilli: role of hydrogen peroxide production. *J Infect Dis.* 2001;184(11):1431–6.
6. Giraldo PC, Polo RC, Amaral RLG do, Reis VV, Beghini J, Bardin MG. Habits and traditions of female college students related to intimate clothing, genital adornments, genital hair removal and sexual practices. *Rev Bras Ginecol e Obs.* 2013;35:401–6.
7. Felix TC, de Araújo LB, de Brito Röder DVD, dos Santos Pedroso R. Evaluation of vulvovaginitis and hygiene habits of women attended in primary health care units of the family. *Int J Womens Health.* 2020;12:49.
8. Fashemi B, Delaney ML, Onderdonk AB, Fichorova RN. Effects of feminine hygiene products on the vaginal mucosal biome. *Microb Ecol Health Dis.* 2013;24(1):19703.
9. Fethers KA, Fairley CK, Hocking JS, Gurrin LC, Bradshaw CS. Sexual risk factors and bacterial vaginosis: a systematic review and meta-analysis. *Clin Infect Dis.* 2008;47(11):1426–35.
10. Vaca M, Guadalupe I, Erazo S, Tinizaray K, Chico ME, Cooper PJ, et al. High prevalence of bacterial vaginosis in adolescent girls in a tropical area of Ecuador. *BJOG An Int J Obstet Gynaecol.* 2010;117(2):225–8.
11. Reed BD, Slattey ML, French TK. The association between dietary intake and reported history of Candida vulvovaginitis. *J Fam Pr.* 1989;29(5):509–15.
12. Peacocke M, Djurkinak E, Thys-Jacobs S. Treatment of desquamative inflammatory vaginitis with vitamin D: A case report. *Cutis.* 2008;81(1):75.
13. Bardin MG, Giraldo PC, Pinto CLB, Piassaroli VP, Amaral RLG do, Polpeta N. Association of sanitary pads and clothing with vulvovaginitis. *DST j bras doenças sex transm.* 2013;123–7.
14. Janković S, Bojović D, Vukadinović D, Daglar E, Janković M, Laudanović D, et al. Risk factors for recurrent vulvovaginal candidiasis. *Vojnosanit Pregl.* 2010;67(10):819–24.
15. Ranjit E, Raghubanshi BR, Maskey S, Parajuli P. Prevalence of bacterial vaginosis and its association with risk factors among nonpregnant women: A hospital based study. *Int J Microbiol.* 2018;2018:1–9.
16. Geng N, Wu W, Fan A, Han C, Wang C, Wang Y, et al. Analysis of the risk factors for aerobic vaginitis: a case-control study. *Gynecol Obstet Invest.* 2016;81(2):148–54.
17. Le Doare K, Heath PT. An overview of global GBS epidemiology. *Vaccine.* 2013;31:D7–12.
18. Suryasa, I. W., Rodríguez-Gámez, M., & Koldoris, T. (2021). Health and treatment of diabetes mellitus. *International Journal of Health Sciences*, 5(1), i-v. <https://doi.org/10.53730/ijhs.v5n1.2864>
19. Diyu, I. A. N. P., & Satriani, N. L. A. (2022). Menopausal symptoms in women aged 40-65 years in Indonesia. *International Journal of Health & Medical Sciences*, 5(2), 169-176. <https://doi.org/10.21744/ijhms.v5n2.1896>