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ORIGINAL ARTICLE

The effects of vaginitis on genital hygiene: A comparative descriptive cross-sectional study

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ABSTRACT

Objective: This study aimed to determine the genital hygiene behaviors of women with and without vaginitis, as well as the factors influencing these behaviors.

Material and Methods: This comparative descriptive cross-sectional study was conducted between October 2023 and February 2024 with a total of 188 women–94 diagnosed with vaginitis and 94 without a diagnosis of vaginitis—who attended the Gynecology Outpatient Clinic. Data were collected through face-to-face interviews using the Descriptive Information Form and the Genital Hygiene Behavior Scale. Ethics committee approval, institutional authorization, and written consent from all participants were obtained.

Results: The numbers of pregnancies, deliveries, miscarriages, and curettages were higher in women with vaginitis compared to those without vaginitis ($p<0.05$). Women without vaginitis had significantly greater knowledge about genital tract infections ($p<0.05$). Women with vaginitis scored significantly lower on the menstrual hygiene subscale of the Genital Hygiene Behavior Scale compared to those without vaginitis ($p<0.05$). In the multivariate analysis, age, duration of menstruation, and frequency of sexual intercourse were identified as determinant factors for genital hygiene behaviors in women with vaginitis.

Conclusion: This study shows that women, both with and without vaginitis, exhibit high genital hygiene behaviors. However, significant differences were observed between the two groups, with women without vaginitis demonstrating better hygiene practices.

Keywords: Genital hygiene, vaginitis, women.

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INTRODUCTION

The age period of 15–49, considered the reproductive years for women, is a time when reproductive issues and health problems are most prominent.[1] Vaginitis is one of the most common health issues among women, caused by the colonization of microorganisms from the external environment in the reproductive organs or the spread of an existing infection.[1] The estimated prevalence ranges from 5% to 70% in both developed and developing countries.[2–6] This widespread health issue represents a significant burden on both individual and societal health.[7]

Vaginitis, characterized by dysfunction of the vaginal flora, commonly presents with increased discharge and itching caused by vaginal irritation from the discharge.[7] Many factors contribute to the development of genital infections, including lack of education, low socioeconomic status, a high number of children, inadequate perineal and menstrual hygiene, not washing hands before and after using the toilet, vaginal douching, wearing inappropriate underwear, infrequent changes of vaginal tampons, unsafe sexual practices, polygamy, smoking, alcohol use, and performing abortions or curettages under unhealthy conditions.[8–10] However, the primary cause of infection is inadequate genital hygiene.[11] Therefore, genital hygiene is an important element in preserving women's reproductive health.[12]

Ensuring genital hygiene is one of the most important steps in preventing genital infections. Genital hygiene practices encompass all behaviors related to the removal of waste products from urine, stool, and menstruation.[13] Proper and thorough personal and genital hygiene is essential to protect the genital area from infections.[10] Inadequate and poor genital hygiene behaviors are known to increase the risk of infection.[8,9] Therefore, genital hygiene behaviors are the most important method for preventing vaginal infections and avoiding more serious consequences (such as cervicitis, endometritis, and PID) that may result from these infections.[11]

Accordingly, since lack of genital hygiene is recognized as one of the primary causes of vaginitis, this study was designed to determine the genital hygiene behaviors of women with and without vaginitis, as well as the factors influencing them.

- Is there a significant difference in genital hygiene behaviors between women with and without vaginitis?
- What are the factors influencing genital hygiene behaviors of women with and without vaginitis?
- How are the genital hygiene behaviors of women with and without vaginitis?

MATERIAL AND METHODS

This comparative descriptive cross-sectional study was conducted between October 2023 and February 2024 with women who applied to the Gynecology Outpatient Clinic of a public hospital. A sample size calculation was performed based on a known population size, which was determined to be 1,268 women. The sample size was calculated considering a 95% confidence interval and a 5% margin of error. Accordingly, a total of 188 women were included in the study, consisting of 94 women diagnosed with vaginitis and 94 healthy women without vaginitis. The participants were aged between 18 and 49, spoke and understood Turkish, had no communication barriers, and were willing to participate in the study.

The data were collected by the researchers through face-to-face interviews. In the study, the data were obtained using the Descriptive Information Form and the Genital Hygiene Behaviors Scale (GHBS).

Descriptive Information Form

Through a review of the relevant literature, the researchers developed a set of 33 questions covering women's sociodemographic characteristics (such as age, education level, employment status, income level, chronic diseases, smoking and alcohol use, etc.), obstetric features (number of pregnancies, number of abortions and miscarriages, number of births, delivery type), menstrual and gynecological characteristics (menstrual duration, frequency, daily pad usage, history of gynecological examinations, reproductive tract infection history, frequency of sexual intercourse, use of contraception, etc.), and genital hygiene behaviors (genital area hygiene, bathing habits, vaginal douching, etc.).[11,13–15]

Genital Hygiene Behaviors Scale (GHBS)

The scale was developed by Karahan in 2017 and consists of three sub-dimensions and 23 items. The sub-dimensions of the scale are "General Hygiene Habits" (items 1–12), "Menstrual Hygiene" (items 13–20), and "Awareness of Abnormal Findings" (items 21–23). The scale is a five-point Likert scale with a minimum score of 23 and a maximum score of 115. High scores indicate positive genital hygiene behavior. The Cronbach's alpha value of the scale was determined as 0.80.[12] In this study, the Cronbach's alpha value of the scale was calculated as 0.88.

Statistical Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used. The normal distribution of the data was assessed using the Shapiro–Wilk test. To compare independent groups, Student's t-test and Mann–Whitney U test were applied, and the Chi-square test was used for analyzing categorical data. Linear regression analysis was employed to identify factors that may influence women's genital hygiene behaviors. In this study, $p<0.05$ was considered statistically significant.

Ethical Consideration

Ethics committee approval (10.25.2023/142) and institutional study authorization (251137893) were obtained from the ethics committee of the hospital where the study was conducted, in accordance with the Declaration of Helsinki. Women who agreed to participate in the study were provided with information about the study's purpose, and their written and verbal informed consent was obtained.

RESULTS

It was determined that the ages of women with and without vaginitis were similar. No statistically significant differences were

Table 1: Individual and obstetric characteristics of participants

Characteristics	Group with vaginitis (n=94)		Group without vaginitis (n=94)		t	p
	Mean±SD		Mean±SD			
Age	33.07±7.19		32.35±5.88		0.755	0.451
Number of pregnancies*	2..66±1.23		1.62±0.96		**6.485**	**0.000**
Number of miscarriages*	1.99±0.46		1.78±0.32		**3.282**	**0.001**
Number of curettage*	1.90±0.29		1.73±0.44		**3.092**	**0.002**
Number of births*	2.09±0.95		1.60±0.87		**2.312**	**0.023**
	n	%	n	%	χ^2	p
Education level						
<8 years	31	33.0	34	36.2	0.282	0.645
>8+ years	63	67.0	60	63.8		
Marital status						
Married	73	77.7	66	70.2	1.356	0.244*
Single	21	22.3	28	29.8		
Employment status						
Working	43	45.7	61	64.9	2.345	0.619
Not working	51	55.3	33	35.1		
Income level						
Income less than expenditure	23	24.5	18	19.2		
Income matches expenditure	46	47.5	49	51.1	0.781	0.677
Income more than expenditure	25	26.0	27	28.7		
Chronic disease status						
Yes	17	18.1	17	17.0	0.037	0.848*
No	77	81.9	78	83.0		
Smoking status						
Yes	41	43.6	33	35.1	1.426	0.232
No	53	56.4	61	64.9		
Alcohol use status						
Yes	30	31.9	25	26.6	0.643	0.423
No	64	68.1	69	73.4		
Mode of delivery**						
Vaginal delivery	36	58.1	13	44.8	0.911	0.340*
Caesarean section	26	41.9	16	55.2		

SD: Standard deviation; t: Student's t-Test; χ^2: Chi-Square analysis; *: Yates Corrected Chi-Square; **: Only women with a history of pregnancy were included.

found between women with and without vaginitis in terms of education level, marital status, income level, employment status, chronic disease status, smoking, and alcohol use (p>0.05). When evaluating the obstetric characteristics of the participants, it was found that the number of pregnancies, deliveries, miscarriages, and curettages was significantly higher in women with vaginitis compared to those without vaginitis (p<0.05) (Table 1).

In the study, there was no significant difference between women with and without vaginitis in terms of mean menstrual duration and frequency of sexual intercourse; however, there was a statistically significant difference between the two groups in terms of gynecological examination, history of continuous discharge in husband/partner, and knowledge of genital infection (p<0.05). Women with vaginitis were more likely to undergo gynecological examination and to have

Table 2: Participant's menstrual and genital hygiene characteristics

Characteristics	Group with vaginitis (n=94)		Group without vaginitis (n=94)		t	p
	Mean±SD		Mean±SD			
Duration of menstruation (days)	5.79±1.60		5.78±1.38		0.049	0.961
Frequency of sexual intercourse (per week)	1.70±1.09		1.71±1.01		-0.069	0.945
	n	%	n	%	χ^2	p
Gynecological examination status						
Yes	83	88.3	70	74.5	6.052	**0.014**
No	11	11.7	24	25.5		
Use of family planning methods						
Effective method	46	48.9	37	39.4	1.797	0.186
Inefficient method	48	51.1	57	60.6		
Spousal discharge						
Yes	11	11.7	2	2.1	7.322	**0.021***
No	83	88.3	92	97.9		
Daily pad use status						
Yes	38	40.4	38	38.3	0.089	0.765
No	56	59.6	58	61.7		
Knowledge of genital infection						
Yes	60	63.8	74	78.7	5.137	**0.023**
No	34	36.2	20	21.3		
Knowledge of genital hygiene						
Yes	68	72.3	79	84.0	3.812	0.051*
No	26	27.7	15	16.0		

SD: Standard deviation; t: Student's t-Test; χ^2: Chi-Square analysis; *: Yates Corrected Chi-Square.

a history of continuous discharge in their partners ($p<0.05$). On the other hand, women without vaginitis were more likely to have knowledge of genital infection ($p<0.05$) (Table 2).

The majority of women with vaginitis (42.2%) underwent gynecological examination due to complaints of vaginal discharge, whereas 50% of women without vaginitis presented for routine examination. In addition, it was determined that women with vaginitis (51%) and without vaginitis (53.2%) mostly used the withdrawal method among family planning methods. Condom use rates were low (vaginitis group: 23.4%, non-vaginitis group: 26.6%). The most preferred products for cleaning the genital area in the toilet in both groups were water (vaginitis group: 51%, non-vaginitis group: 66%) and toilet paper (vaginitis group: 30.9%, non-vaginitis group: 21.3%) (Table 2).

When the Genital Hygiene Behavior Scale and sub-dimension scores of women with and without vaginitis were examined, no significant difference was found between the mean scores of all sub-dimensions and total scores of the scale except for the menstrual hygiene sub-dimension. It was determined that women without vaginitis had significantly higher scores in the menstrual hygiene sub-dimension ($p<0.05$). It was also determined that women in both groups had high genital hygiene behaviors according to the highest score (Max=115) that could be obtained from the scale (Table 3).

In the multivariate analysis, age, duration of menstruation, and frequency of sexual intercourse among women with vaginitis were identified as factors affecting their genital hygiene behaviors. These factors explained 30% of the variance in the Genital Hygiene Behavior Scale score ($R^2=0.296$). It was found that as the age of women with vaginitis increased, their genital hygiene behaviors were positively influenced, while longer menstruation duration and higher frequency of sexual intercourse negatively affected their genital hygiene behaviors (Table 4).

DISCUSSION

This study aimed to identify the differences in genital hygiene behaviors between women with and without vaginitis, as well as the factors influencing these behaviors. Additionally, the general characteristics of genital hygiene practices in both groups were

Table 3: Participant's genital hygiene behavior scale subscale and total score averages

Variable	Group with vaginitis (n=94)	Group without vaginitis (n=94)	t	p
Genital Hygiene Behavior Scale	**Mean±SD**	**Mean±SD**		
Genital hygiene subdimension	50.10±5.05	50.85±4.19	-1.098	0.274
Menstrual hygiene subdimension	33.00±4.69	34.72±4.82	**-2.484**	**0.014**
Abnormal Finding Awareness Subscale	13.08±2.29	12.61±2.56	1.317	0.189
Total	96.19±9.17	98.19±8.45	-1.555	0.122

SD: Standard deviation; t: Student's t- Test.

Table 4: Factors affecting genital hygiene behaviors of women with vaginitis according to linear regression analysis

Variables	B	SE	Beta (β)	t	p	95% CI (OR)	
Constant	92.558	4.128		22.414	0.000	84.411	100.705
Age	0.196	0.100	0.146	1.971	**0.050**	0.000	0.393
Duration of menstruation (days)	-0.706	0.431	-0.119	-1.937	**0.049**	-1.557	0.145
Frequency of sexual intercourse (per week)	-1.347	0.615	-0.160	-2.190	**0.030**	-0.134	1.211

SE: Standard error; CI: Confidence interval; OR: Odd ratios; Dependent variable: Genital Hygiene Behavior Scale, R: 0.419, Adjusted R^2: 0.296, F: 3.080, p=0.05.

examined. The findings provide valuable insights into the role of sociodemographic characteristics, reproductive health history, and individual hygiene habits in the development of vaginitis. In the following discussion, these results are interpreted in light of existing literature to highlight the importance of education, knowledge level, and behavioral factors in the prevention of vaginitis.

Vaginitis is one of the most important reproductive health problems, and its prevalence is increasing with the decrease in the age of unprotected sex.[16] The main cause of vaginitis is the lack of genital hygiene.[11] Similar to the results of this study, it has been reported that as the number of pregnancies, births, abortions, and curettages increases, genital hygiene behaviors decrease and the incidence of vaginitis rises; women with vaginitis undergo more gynecological examinations, and their husbands have a history of discharge.[11,16–18]

The most important factor in preventing vaginitis is maintaining genital hygiene.[11] It is emphasized that using only water for genital hygiene is healthy, and the use of additional products increases the risk of vaginal infections.[13,19] In studies, it has been reported that water and toilet paper are mostly used for genital hygiene.[14,15,19,20] Similarly, women in this study reported that they mostly used water and toilet paper for genital hygiene. This can be considered an important strategy to reduce the risk of vaginitis.

However, in this study, it was determined that women without vaginitis maintained better menstrual hygiene, and their menstrual hygiene behaviors were higher. Similar studies have also found that the risk of vaginal infection increases when menstrual hygiene deteriorates.[21–23] In a descriptive study conducted by Sianou et al.[24] investigating the prevalence of vaginitis in different age groups (prepubertal, pubertal, reproductive-age women, and postmenopausal women), it was found that vaginitis cases were most common in women of reproductive age, especially during the menstrual period. It is believed that encouraging menstrual hygiene practices during menstruation, providing education and counseling on the correct use of menstrual hygiene products, and expanding these educational efforts to raise awareness can contribute to the prevention of vaginal infections.

The levels of genital hygiene behaviors vary from woman to woman. While some studies indicate that women's genital hygiene behaviors are at a high level,[15,21,25] other studies indicate that, particularly in women with genital tract infections, poor genital hygiene behaviors are prevalent, which create a foundation for the frequent recurrence of infections.[11,14,16] In this study, it was determined that women's genital hygiene behaviors were high. Although the high levels of genital hygiene behaviors and awareness of genital infections in both groups may appear surprising, this can be explained by the high educational attainment of the participants, regular access to healthcare services, and the voluntary nature of the study sample, which might have attracted women with greater health awareness.

In one study, it was found that advancing age negatively affected genital hygiene behaviors in women,[26] while in another study, it was determined that genital hygiene behaviors increased as the age of women increased.[25] In this study, while no significant differences were found in terms of age, education level, marital status, or income between the two groups, multivariate analysis revealed that

age, menstrual duration, and frequency of sexual intercourse were significant predictors of hygiene behaviors in women with vaginitis. The positive influence of age may be due to increased health awareness and experience. On the other hand, longer menstrual duration and more frequent sexual activity may create challenges in maintaining consistent hygiene routines, which could reduce overall hygiene scores. Moreover, women without vaginitis had higher menstrual hygiene scores and greater knowledge about genital infections, suggesting that knowledge and preventive practices play a crucial role. These findings suggest that both knowledge and health-seeking behavior are important determinants of effective hygiene practices. Factors such as education level, cultural norms, health literacy, and previous infection experiences may also contribute to the development of hygiene behaviors and should be further explored in future research.

In a study by McLaughlin et al.,[27] it was found that the duration of menstruation and increased frequency of sexual intercourse were associated with higher rates of vaginal infections. In this study, it was determined that as the age of women with vaginitis increased, their genital hygiene behaviors were positively affected, while as the duration of menstruation and frequency of sexual intercourse increased, their genital hygiene behaviors were negatively affected. Multivariate regression analysis revealed that age, menstrual duration, and sexual activity frequency were significant predictors of genital hygiene behaviors, accounting for approximately 30% of the variance. The positive effect of age on hygiene practices may reflect greater health awareness and experience among older women. Conversely, longer menstrual periods and more frequent sexual activity negatively affected hygiene behaviors. This may be due to increased physical burden during menstruation and inconsistent postcoital hygiene practices. Although these three factors were statistically significant, a large portion of the variance remains unexplained, indicating the potential influence of other variables such as education, cultural practices, and access to reproductive health information.

Women's knowledge of genital infections is an important factor in preventing vaginitis.[11] In a study conducted by Nirmalasari Hariadi Putri et al.[28] with 50 female motorcycle taxi drivers, it was found that women with vaginitis had limited knowledge about vaginal infections. In contrast, a cross-sectional study by Erbil et al.[18] with married women found that their knowledge of genital tract infections was high. In this study, similar to the results of Erbil's study, women without vaginitis exhibited a high level of knowledge about genital tract infections.[18] It is believed that the high level of education among both women with and without vaginitis in the study contributed to their increased awareness of genital tract infections.

It is emphasized that the use of barrier contraceptive methods, such as condoms, helps reduce the risk of vaginal infections and contributes to maintaining overall genital hygiene.[29] While methods such as the use of intrauterine devices and withdrawal contribute to the development of vaginitis, condom use has a preventive effect against vaginitis.[27,30] In a descriptive study conducted by Calık et al.[11] with married women, it was found that the withdrawal method was the most commonly used contraceptive, while condom use was reported to be quite low. This study also found that the withdrawal method was the most commonly used, while the rate of condom use was low.

Limitations

The limitations of this study include the reliance on self-reported data from participants, which may introduce recall bias. Additionally, as the study was conducted at a single institution with women who sought care only there, the results cannot be generalized to the wider population.

CONCLUSIONS

The study findings show that both women with and without vaginitis exhibit high genital hygiene behaviors. Significant differences were observed in the genital hygiene behaviors between the two groups, with women without vaginitis demonstrating better hygiene practices. Additionally, it was found that as the age of women with vaginitis increased, their hygiene behaviors improved; however, as the duration of menstruation and frequency of sexual intercourse increased, their hygiene behaviors were negatively affected.

Knowledge about vaginal infections is a critical factor in the prevention of vaginitis. In this context, nurses should organize informative training sessions on vaginal infections and genital hygiene for women of all age groups and their partners. These training sessions will increase the health knowledge of both women and their partners, thereby contributing to the development of proper hygiene behaviors. Furthermore, it is recommended to conduct scientific research on vaginitis and genital hygiene behaviors using a larger sample of individuals from various sociodemographic backgrounds and cultures. Additionally, collaborating with non-governmental organizations and the media to organize awareness campaigns on the prevention of vaginitis and genital hygiene is suggested to reach broader audiences.

Statement

Ethics Committee Approval: The University of Health Sciences, Turkey. Istanbul Zeynep Kamil Maternity and Children's Diseases Health Training and Research Center Clinical Research Ethics Committee granted approval for this study (date: 25.10.2023, number: 142).

Informed Consent: Written consent was obtained from all participants. **Conflict of Interest:** The authors have no conflict of interest to declare.

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