

# Genital Hygiene Behaviors of Women and Their Effect on Vaginal Infections

Kıymet Yesilcicek Calik<sup>1</sup> , Reyhan Erkaya<sup>1</sup> , Gulnur Ince<sup>2</sup> , Nazende Korkmaz Yildiz<sup>3</sup> 

<sup>1</sup> Karadeniz Technical University, Faculty of Health Sciences, Department of Nursing, Trabzon, Turkey.

<sup>2</sup> Karadeniz Technical University, Farabi Hospital Gynecology and Obstetrics Polyclinic, Trabzon, Turkey.

<sup>3</sup> Istanbul Medipol University, Faculty of Health Sciences, Department of Midwifery, Istanbul, Turkey.

**Correspondence Author:** Reyhan Erkaya

**E-mail:** reyhanozturk30@hotmail.com

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## ABSTRACT

**Objectives:** This descriptive study was carried out with the purpose of identifying women's genital hygiene behaviors and the effects of these behaviors on vaginal infections.

**Methods:** The study included 266 married women, ages 20-49, who consented to participate in the research and were registered at the University Hospital in Trabzon, Turkey. The data were collected with a questionnaire, the Genital Hygiene Behavior Inventory (GHBI), a gynecological examination and the Pap smear test. The results were evaluated by descriptive statistical methods (frequencies, percentages, means, and standard deviation), the Student's t-test, Kruskal Wallis and Mann Whitney U tests.

**Results:** The mean GHBI score of the women was found to be 77.41±9.05. There were statistically significant differences in genital hygiene behaviors between the women in terms of the women's education, profession, presence or absence of social security, income, husband's work and education, number of pregnancies, total number of children, spontaneous abortion, presence of vaginal discharge and the duration of complaints ( $p<0.05$ ). Of the women, 54.9% reported that they had vaginal discharge; 45.1% had pathological vaginal discharge and odor (34.6%) and burning (35%) complaints. The speculum examination showed that 42.6% had pathological discharge and the incidence of genital infection was 79% in the Pap smear. According to the speculum examination, 71.4% of the women were found to have either pathological or non-pathological discharge.

**Conclusions:** It was found that the mean GHBI score of the women was slightly above the moderate level and that wrong and inadequate genital hygiene practices increased the women's risk of vaginal infection.

**Keywords:** Genital hygiene, genital hygiene behavior inventory, genital infection, women

## 1. INTRODUCTION

The 15-49 years in which women are fertile is a period in which reproductive health problems and issues stand out. One of the most common reasons women in reproductive ages apply to gynecology outpatient clinics is urogenital infection (1). Every year, around one million women in the world suffer urogenital system infections and at least 75% have a history of genital infection (1,2)]. It is reported in regional studies in Turkey that both genital infections (52%-92%) (3-6) and risky hygiene behavior that may cause vaginal infections are common (11-19).

Factors leading to genital infection in women are very diverse. The proximity of the urethra, vagina, and anus to each other is the most important factor creating a predisposition for genital infections. This is accompanied by individual factors that increase the risk of genital infection.

These individual factors are a low level of education and socioeconomic status, lack of information about genital hygiene, an excessive number of children, the practice of vaginal douching and the habit of using cloth padding in underwear, IUDs, not washing hands before and after going to the toilet, improper perineal cleaning in the toilet, inappropriate underwear, lack of genital hygiene during menstruation (7-10).

Genital infections do not always threaten women's lives, but their symptoms can lead to serious illnesses (20). These infections may lead to ectopic pregnancy, sepsis, cervical cancer, infertility and congenital infections in the newborn (20, 21). Infections can also cause psychological problems, social isolation, sexual problems, fatigue, and impaired quality of life in women. Time, work and

economic losses can be experienced depending on the intensity of these factors (22-24). Genital hygiene is the most important method of preventing genital infections and their more serious consequences (25,26). It is known that habits of personal hygiene are important in the control of many infectious diseases. However, research results indicate that women lack knowledge about appropriate genital hygiene practices. It is therefore important to know the risk factors that cause genital infections in women.

The general data on genital hygiene behavior and genital infections in Turkey largely reflect regional characteristics due to the difficulty of conducting studies on the personal matter of genital hygiene in the general population, especially since there are region-specific differences in practices. For this reason, new and current studies need to be carried out to gather information about the relationship between genital hygiene behaviors and genital infection. It was in this context that this study was conducted. The aim was to explore the genital hygiene behaviors of women and the effects of these behaviors on vaginal infections.

## 2. METHODS

### 2.1. Type of study

This is a descriptive study.

### 2.2. Place and time of study

The study was conducted in Trabzon, Turkey, between January 1, 2015, and May 2015.

### 2.3. Study population and sampling

The study consisted of 10400 women who applied to the gynecology polyclinic of the Farabi Hospital of the Faculty of Medicine for any reason. The sample size was calculated by known population sample selection formula and was set at a total of at least 266 in the 95% confidence interval. The study included women between 20 and 49 years of age who were literate at least, sexually active, non-menopausal, not pregnant or postpartum. Farabi Hospital of the Faculty of Medicine, where the research was conducted, was preferred because of the high potential of patients and the application of the woman from every socio-economic level.

### 2.4. Data collection instruments

The data of the study were collected through face-to-face interviews. The data were collected via a questionnaire prepared by the researchers and consisting of 32 questions that address socio-demographic and obstetric characteristics, as well as vaginal infection or infection status, and Genital

Hygiene Behavior Inventory (GHBI) (14,16). Then, a Pap smear test was taken by a specialist doctor for gynecological examination of the women and the results were recorded by the researcher after 20 days. Following the application of the questionnaire, the women were trained on the issues related to genital hygiene behaviors that women wonder about, they mistreat and lack by the researcher.

### 2.5. Genital hygiene behavior inventory (GHBI)

The inventory, in the format of a four-level item, was developed by Ege and Eryılmaz to determine the genital behaviors of women aged between 15 and 49 (14). The inventory is single-dimensional and includes 24 positive and 3 negative items. Each item includes the alternative answer "never", "sometimes", "frequently", and "always". For the items with positive statements, the answer "never" receives "1" point, and the other answers "2", "3", and "4" points, respectively. For the items with negative statements, the classification was done in the reverse way. In the inventory, the lowest and highest total points are 27 and 108 points, respectively. The high total points showed good behavior related to genital hygiene. The Cronbach's alpha value of the inventory was found as 0.86 by Ege and Eryılmaz (14), whereas it was found as 0.87 in this study.

### 2.6. Data analysis

Statistical analyzes were performed using SPSS 17.0 statistical package program. As well as descriptive statistical methods (frequency, percentage, mean, standard deviation), the Kolmogorov Smirnov test was used to determine if they were appropriate for normal distributions in comparison with the quantitative data, the Student's t test was used for the data with normal distributions, the Mann Whitney U test and the Kruskal Wals test were used for the data with no normal distribution. The results were evaluated at a 95% confidence interval.

### 2.7. Ethical considerations

This study was approved by the Ethics Committee (E.3734), and all the procedures were performed under the supervision of the committee and according to the 1964 Helsinki Declaration.

## 3. RESULTS

The mean GHBI score of women with a discharge and discharge complaints lasting more than 6 months was found to be lower ( $p < 0.05$ ) (Table 1). The mean GHI score of the women was found to be  $70.27 \pm 10.05$  (Table 1).

The mean age of the women was  $38.5 \pm 7.9$  (min: 20, max: 49). 52.6% of the women had primary school and below education level, 70.3% were unemployed, 50.4% had

middle income level, 83.8% had a nuclear family, 92.1% had social security and 63.9% had been married for more than 10 years. It was found that 59.4% of the women had a maximum of 3 pregnancies, 67.3% had 3 or fewer children, 74% did not have a spontaneous abortion, 84.6% did not have self-induced abortion, and 54.9% used a family planning method. 25.9% of those using a family planning method used a traditional withdrawal method. 45.5% and 66.5% of the husbands of the women were secondary/high school graduates and employed respectively (Table 2).

**Table 1.** Comparison of the GHBI scores according to genital complaints characteristics of women

Genital complaints of women	N	Mean Rank	Median	Test / p
<b>Discharge</b>				
Yes	146	119.83		7119.500**
No	120	144.74		.009
<b>The duration of the complaint</b>				
1 month and less	63	132.21	69.00	7.866*
2-3 months	86	143.42	71.50	
4-5 months	21	162.71	75.00	
6 months and over	96	119.07	67.00	
	<b>X</b>	<b>SD</b>	<b>Min-Max</b>	
<b>Total scores of the GHBI scale</b>	70.27	10.05	46.00-95.00	
* Kruskal Wallis Tests , ** Mann Whitney U Tests				

It was found that there was a statistically significant difference between GHBI scores and age, education, the occupation of the husband, the education level of the husband, income level, the length of marriage, family type, the number of pregnancies, the number of alive children and spontaneous abortion ( $p < 0.05$ ) (Table 2).

The results showed that the GHBI score decreased as the women's age and marriage progressed. As the education level of the women and her husband increased, if the monthly income was perceived as good and if the husbands were employed and if they had nuclear families, GHBI scores increased. There was no statistically significant difference between self-induced abortion, the status of using a family planning method and the type of family planning method GHBI mean scores ( $p > 0.05$ ) (Table 2).

**Table 2.** Comparison of GHBI scores of women in terms of socio-demographic and obstetric characteristics

Characteristic	N(%)	Mean Rank	Median	Test / p
<b>Age</b>				
20-29	51 (19.2)	162.45	77.00	13.096*
30-39	81 (30.5)	140.36	71.00	.001
40-49	134 (50.4)	118.33	67.00	
<b>Mean age</b>	38.58±7.9 (min 20, max 49)			
<b>Education</b>				
Primary school and below	140 (52.6)	97.01	65.00	83.433*
Middle-High school	90 (33.8)	156.28	73.50	.000
University and over	36 (13.5)	218.47	80.00	
<b>Employment status</b>				
Employed	79 (29.7)	135.44	70.00	7233.500**
Unemployed	187 (70.3)	132.68	73.00	.789
<b>The occupation of the husband</b>				
Unemployed	50 (18.8)	110.07	65.00	17.785*
Employed	177 (66.5)	147.45	72.00	.000
Retired	39 (14.7)	100.22	63.00	
<b>Education status of the husband</b>				
Primary school and below	76 (28.6)	73.13	61.50	89.948*
Middle-High school	121 (45.5)	136.87	70.00	.000
University and over	69 (25.9)	197.08	79.00	
<b>Income Level</b>				
Satisfactory	65 (24.4)	183.82	77.00	56.616*
Medium	134 (50.4)	132.77	70.00	.000
Non-satisfactory	67 (25.2)	83.14	63.00	
<b>Social security</b>				
Yes	245 (92.1)	132.45	69.00	2315.500**
No	21 (7.9)	145.74	74.00	.447
<b>Length of marriage</b>				
1-5	51 (19.2)	150.82	74.00	17.593*
6-10	45 (16.9)	168.04	73.00	.000
>10	170 (63.9)	119.16	67.00	
		<b>X</b>	<b>SD</b>	
<b>Family type</b>				
Nuclear family	223 (83.8)	72.03	9.61	8.828***
Extended family	43 (16.2)	61.13	6.90	.000
<b>Number of pregnancy</b>				
No	28 (10.5)	774.91	74.00	27.330*
1,2 or 3	158 (59.4)	143.78	70.50	.000
4 or more	80 (30.1)	98.71	65.00	
<b>Number of alive children</b>				
No	42 (15.8)	163.07	74.00	24.591*
1,2 or 3	179 (67.3)	138.64	60.00	.000
4 or more	45 (16.9)	85.46	64.00	
<b>Spontaneous abortion</b>				
Yes	69 (25.9)	108.74	67.00	5088.00**
No	197 (74.1)	142.17	72.00	.002
<b>Self-induced abortion</b>				
Yes	41 (15.4)	68.41	10.30	1.286***
No	225 (84.6)	70.60	9.99	.199
<b>Use of family planning</b>				
Yes	146 (54.9)	70.82	10.49	998***
No	120 (45.1)	69.59	9.49	.319
<b>Family Planning method that is used</b>				
Not using	120 (45.2)	128.67	68.50	5.185*
Withdrawal method	69 (25.9)	129.49	70.00	
Condom	13 (4.8)	174.81	79.00	
RIA	45 (16.9)	134.08	69.00	
OKS	19 (7.2)	148.95	73.00	
* Kruskal Wallis Tests , ** Mann Whitney U Tests , *** Student's t Tests				

54.9% of the women were found to have a discharge complaint, 52.6% had pains, 35% had burning sensation, 34.6% had an odor problem, and their complaints lasted for 6 months and over (36.1%). 71.4% of the women had normal vaginal complaints on the speculum examination, but 78.9% of them had vaginal infections in the pap smear test (Table 3).

**Table 3.** Distribution of vaginal infections according to microscopic and symptomatic approach diagnosis

Genital complaints of women	N(%)
<b>Discharge</b>	
Yes	146 (54.9)
No	120 (45.1)
Total	266 (100.0)
<b>Type of discharge</b>	
Clear, odorless*	26 (9.8)
Sour milk-like discharge **	32 (12.0)
Green-yellow frothy discharge **	34 (12.8)
Homogeneous watery, broth-like stream**	29 (9.4)
Purulent discharge/Thin gray/white discharge **	25 (10.9)
Total	146 (54.9)
<b>Other complaints</b>	
Burning sensation	93 (35.0)
Odour	92 (34.6)
Menstrual irregularity	67 (25.2)
Pruritis	55 (20.7)
Bleeding after sexual intercourse	38 (14.3)
Pain	140 (52.6)
<b>The duration of the complaint</b>	
1 month and less	63 (23.7)
2-3 months	86 (32.3)
4-5 months	21 (7.9)
6 months and more	96 (36.1)
<b>Speculum examination</b>	
Normal discharge*	76 (28.6)
White, cheese like discharge**	24 (9.0)
Green-yellow, frothy discharge **	13 (4.9)
Thin gray-white discharge **	27 (10.2)
Purulent discharge **	35 (13.2)
Homogeneous watery, broth-like stream**	14 (5.3)
Touch-cervix bleeds ***	20 (7.5)
Strawberry-like cervix***	2 (0.8)
Erosion/Ulcer***	32 (12.0)
<b>PAP-Smear test results</b>	
Candida**	21 (7.9)
Trichomonas Vaginalis**	2 (0.8)
Bacterial Vaginosis**	3 (1.1)
Mixed Infections**	184 (69.2)
Normal discharge*	56 (21.1)

\*Non pathologic discharge, \*\*Pathologic discharge, \*\*\* Pathological image

#### 4. DISCUSSION

Vaginal infection is an important health problem for women and its prevalence is increasing worldwide. Genital hygiene

plays a key role in preventing genital infections (3,13-15,22,27).

The study showed that incorrect and inadequate genital hygiene behavior increases the risk of vaginal infection. The mean GHBI score of the women in the study was found to be  $70.27 \pm 10.05$ . At the same time, a significant relationship was found between genital discharge complaints and GHBI score hygiene behaviors ( $p < 0.05$ ). In other studies, inadequate genital hygiene behaviors are mentioned as being among the most important causes of vaginal infection (3-6, 26). For example, the mean score of GHBI was found to be  $80.90 \pm 10.54$  in Orak and Canuygur's study (7),  $77.7 \pm 12.8$  in Ege and Eryılmaz's study (14) and  $75.01 \pm 11.63$  in Çankaya and Ege's study (26). It should be noted that the rates of positive genital hygiene behaviors have been generally found to be low in the studies of genital hygiene behavior conducted in Turkey. It is imperative in terms of protecting against genital infection that genital hygiene practices are implemented correctly.

A significant relationship was found between the basic individual risk factors of age, education levels, the duration of marriage, and the women's GHBI mean score. That is, as women's ages and the duration of their marriages increased, the mean GHBI score decreased. The findings of Polat et al. and Yasmin and Mukherjee confirm this in that the authors showed that the incidence of genital infections increased with age and years of marriage (28,29). In addition, *T. vaginalis* infections were reported to be more common among women of ages 30–40, the period in which women are sexually active (30). Another study however reported no correlation between the mean GHBI score and women's ages (14). Still another study conducted with 134 pregnant women in Izmir revealed that there was no correlation between the mean GHBI score and women's ages (16). The differences seen here may be attributed to the fact that these studies were conducted in regions of different socio-cultural and economic levels, resulting in an increased mean GHBI score due to the young women's having more access to information.

The mean GHBI score was found to be higher in women who had a good monthly income level. This result suggests that as their average monthly income increases, women enjoy better conditions and the likelihood of accessing services and carrying out appropriate hygienic practices increases. In a study by Dan et al. (31), vaginal infections were seen to be higher in those with poor socioeconomic status, supporting the finding of the present study.

When the mean education level of the women and their GHBI scores were examined, it was seen that while the women with an education level of primary school or less had a lower GHBI score, graduates of high school and university had higher GHBI scores. Yağmur (11), Ege and Eryılmaz (14), Koştu and Beydağ (15) reported that high school graduates had higher GHBI scores, which supports the findings of the present study. This outcome suggests that the higher the education level of a woman, the better knowledge of

genital hygiene she has and the more she is sensitive toward preventing genital infections.

It was seen in the study that the GHBI mean score of the women with more education and whose husbands were employed was higher. Çankaya and Ege's study similarly showed that women whose husbands were primary school graduates and without a permanent job had lower scores than those whose husbands were graduates of high school or more or were civil servants (26). In another study, the mean GHBI score of women with husbands having a higher level of education and who are civil servants is high (14). Having a husband with a permanent job implies having a constant income and health insurance. This has a significant impact on creating a certain level of prosperity, interactive relations in a social environment, relatively better economic conditions, and the development of health consciousness and correct genital hygiene behaviors.

The study showed that the mean GHBI score of the women living in a nuclear family was higher than the women living in an extended family. Similar to our data, Ege and Eryılmaz (14) demonstrated in their study that mean GHBI scores were higher in women living in nuclear families. It can be said that it is important to ensure an individual's need for privacy if adequate hygienic habits are to be maintained.

As the total number of pregnancies, the number of living children, and the number of spontaneous abortions increased in the study, the mean GHBI scores decreased. Supporting our data are the studies by Özkan and Demir (24), who indicated that spontaneous abortion raised the risk of vaginal infection, while studies by Çankaya and Ege, Patel et al. and Prasad et al. (26,32,33) revealed that the number of pregnancies and births had an impact on vaginal infection risk. Prasad et al. (33) too reported an increased risk of vaginal infection in the same context. It can be said then that women's experiences influence their susceptibility and vulnerability towards risk.

The use of an intrauterine device (IUD) has been associated with genital system infections (27,35). Besides studies that have pointed to increased risk of sexually transmitted diseases and even more important, of pelvic inflammatory disease (PID) with the use of IUD's, there are also studies that refute this association (35-38). Our research however did not reveal any significant difference in GHBI scores in terms of any type of birth control method or specifically associated with the use of an IUD.

Researchers have indicated in previous studies that inappropriate perineal hygiene may lead to genital infections (7,9, 12,39). The incidence of genital infection in the women in our study was found to be 79% in the Pap smear test. The study by Hamed found a higher frequency of genital infections among participants who practiced incorrect techniques (27). In another study, the authors reported the frequency of genital infections as 35.1% among participants who practiced correct genital hygiene and 38.1% among those who cleansed the genital area incorrectly (25). Similarly, the incidence of genital infection was determined as 71.1% in a

study by Hacıoğlu et al. (34), and 65.6% in a study by Öner et al. (40).

The literature reveals that the majority of women experience a genital infection at least once in their life (2,17,20,26,30). In this study, the rate of women who stated that they had vaginal discharge was 54.9%. Of these women, 45.1% stated that they had a pathological condition, odor (34.6%) and burning (35%). The speculum examination determined that vaginal discharge was pathological in 42.6% of the women. In the study by Ortaylı et al. (41), the vaginal discharge rate was 60.5% while 49.3% of women had odor. Furthermore, the mean GHBI score was lower among women who currently had discharge that had lasted for more than 6 months. In Çankaya and Ege's (26) study, 54.8% of the women were found to have vaginal discharge with odor and in the women who complained of having malodorous discharge in the last one year, GHBI mean scores were found to be low, which supports our findings. Similar to our results, an increase in vaginal infections and vaginal discharge, malodor, vaginal itching, redness in the genital tract, pain in the lower abdominal region, and burning in the vagina were observed in the studies performed by Kısa and Taşkın's (42), Bezircioğlu and Önez (43) and Karer et al. (44). In our study, 71.2% of the women were found to have either a pathological or non-pathological discharge. This high rate is significant in terms of women's health and points to the need for more education and awareness programs.

## 5. CONCLUSION

Early recognition of vaginal infections, initiating appropriate treatment and taking necessary precautions are essential in protecting and improving women's health. In conclusion, it was determined that women's genital hygiene behaviors are inadequate and they lack information on appropriate and inappropriate genital hygiene practices. It is important for the protection and improvement of female reproductive health that women acquire correct genital hygiene habits. Both at the individual level and in collective training, women should be given health education on genital hygiene practices and abnormal genital discharge.

### *Limitations of the study*

The study has some limitations. First, the results cannot be generalized because the sample size is small, the study was conducted at a hospital and answers were self-reportedly given. Therefore, multicentric studies with large sample sizes are required.

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