

EVALUATION OF GENITAL HYGIENE BEHAVIORS OF FEMALE SECONDARY SCHOOL STUDENTS: IN TURKIYE

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Abstract

Aim: The study was conducted to evaluate the genital hygiene behaviors and habits of female secondary school students in the adolescent period.

Methods: The study was conducted in a descriptive and correlational design between February and June 2022 to determine.

The study population consisted of 355 female students studying in all high schools affiliated with the Ministry of National Education in Vize district of Kırklareli province in Türkiye. It aimed to reach the entire population without determining the sample size. As a result, 194 female students who volunteered to participate in the study were included in the sample. In data collection, the "Personal Information Form" and "Genital Hygiene Behavior Scale" were applied using the face-to-face interview method.

Results: It was found that the mean age of the students was 15.74±1.1 ages, the majority of them lived with their parents, more than half of them (67.5%) didn't receive information about genital care and hygiene, almost all of them (92.3%) used materials for cleaning the genital area, their genital hygiene behaviors were positive, and they thought that they were given inadequate education about hygiene at school or in classes. It was determined that the genital hygiene behaviors and menstrual hygiene of the students living with only a mother or father were more positive, and the use of materials for genital hygiene was higher in the students living in the city center and district compared to the students living in the village.

Conclusion: As a result, it was observed that the mother's education level, family income level, and the person living with her positively affected general hygiene and menstrual hygiene habits.

Keywords: Adolescent, hygiene, genital hygiene, behavior, nursing.

Introduction

Personal hygiene and self-care practices are essential in every period of life to protect and improve health. One of these practices is genital hygiene. Genital hygiene is a broad term that includes various hygiene behaviors and care practices necessary to protect the organs in the urogenital region from infectious agents, maintain physical integrity, and improve functional health [1, 2]. The meaning of genital hygiene is affected by individual differences. It is affected by factors such as low socio-economic level, lack of education, lack of knowledge about perineal hygiene, improper genital hygiene, not paying attention to hygiene during

menstruation, and using unhygienic materials during menstruation [3, 4].

The genital area is the most humid, warmest, and sensitive body part. Various excretions such as menstrual blood, urine, and sweat can accumulate in this area, which may increase the susceptibility to genital infections. Genital infections are an essential health problem with adverse effects, especially for women, and are among the main reasons that push women to the gynecology outpatient clinic for medical help [5]. In the literature, it is reported that approximately one million women worldwide experience genital infections every year, and 75% have a history of vaginal infection [6,

7]. These infections can be easily treated and prevented, or their complications can be reduced when diagnosed early. In this context, acquiring correct genital hygiene habits is a fundamental reason [8].

Adolescence is when the individual begins to manage their hygiene in the light of information obtained from their family, school, peers, or the internet. With the new education system in our country, the secondary education age coincides with the generations of students between 10-13 ages. Management of menstrual hygiene should be a critical issue, especially for adolescent girls, but it is often neglected [9, 10]. Lack of adequate information about genital hygiene from early adolescence can lead to misinformation and misapplication. Schools' inadequate cleaning and hygiene areas may also cause students to have an uncomfortable menstruation process [9]. Therefore, evidence-based data on adolescents' menstrual hygiene management is essential to take steps to protect them from future genital infections. It is vital for nurses, who play a crucial role in achieving and maintaining health, to analyze the genital hygiene behaviors of adolescents, to recognize abnormal vaginal secretions, and to provide counseling to ensure that people apply to the health institution for early diagnosis.

Methods

Study design and sample size

The study was conducted to evaluate the genital hygiene behaviors and habits of female secondary school students in the adolescent period. The population of the study consisted of all female students (N:355) studying in all high schools affiliated with the Ministry of National Education in Vize in Turkiye province between February and June 2022. Since it aimed to reach the entire population, no sampling calculation was made to determine the number of samples. For this study, the estimated sample size is derived from the online Raosoft sample size calculator. The sample size was calculated based on a response rate of 50%, a confidence interval of 95%, and a margin of error of 5%, the largest required sample size is 355. The recommended sample size has found minimum 185. Accordingly, this study included of 194 students. The response rate was 54.64 percent of the sample population.

During data collection, schools were visited by the researcher to interview students studying in the institutions within the scope of the sample. The times when the students were available were determined by the school administration. At these times, students were first informed about the purpose of the study and that the data obtained would remain confidential and not be shared. After the students' verbal consent to participate in the study was obtained, written permission was obtained from their parents with the "Informed Voluntary Consent Form". The data collection forms were filled out in the library or the available classrooms the school administration planned during the students' free time. The data collection process took an average of 25 minutes for each class.

Data collection tools

"Personal information form" and "Genital Hygiene Behaviors Scale" were used for data collection. The "Personal Information Form" consisted of 18 questions related to genital hygiene behaviors, such as the students' socio-demographic characteristics (age, class, school, parents education, income status, the people with whom she lives) the status of receiving education about genital hygiene, the presence of materials used

in genital area cleaning, and the status of experiencing genital infections.

"Genital Hygiene Behaviors Scale"; The scale developed and validated by Karahan (2017) is a five-point Likert-type scale consisting of 23 items. The scale has 3 sub-dimensions: general hygiene habits, menstrual hygiene, and awareness of abnormal findings. High scores obtained from the scale indicate that genital hygiene behavior is positive [6]. In the study, the Alpha value of the scale was determined to be 0.81.

Ethical approval

"Ethics Committee Approval" (Decision no:2021/50-38, Date:09.04.2021) was obtained from XXX University Non-Interventional Clinical Research Ethics Committee to conduct the study. After the ethics committee's approval, institutional permission numbered E-81588373-605.01-44240020 was obtained from the Ministry of National Education of Kırklareli, Republic of Turkiye, to conduct the study. Consent was obtained from the parents of the students participating in the study with the "Informed Voluntary Consent Form."

Study Limitations

- Conducting the research on limited dates.
- The research covers all high schools in Vize district of Kırklareli and cannot be generalized to the whole Kırklareli.
- Only students with parental consent can participate in the study.

Data analysis

The data obtained in the study were analyzed using SPSS (Statistical Package for Social Sciences) for Windows 22.0 program. The Kolmogorov-Smirnov test examined the normal distribution of the data. Normality distribution histograms of the mean scores of the Genital Hygiene Behaviour Scale of the students were also examined (Figure 1). Descriptive statistical methods were used in the evaluation of the data. Mann Whitney U test and Kruskal-Wallis H tests were used as nonparametric tests. The chi-square test (Pearson Chi-Square, Fisher's Exact test) was used to compare qualitative data. The results were evaluated at a 95% confidence interval and $p < 0.05$ significance level.

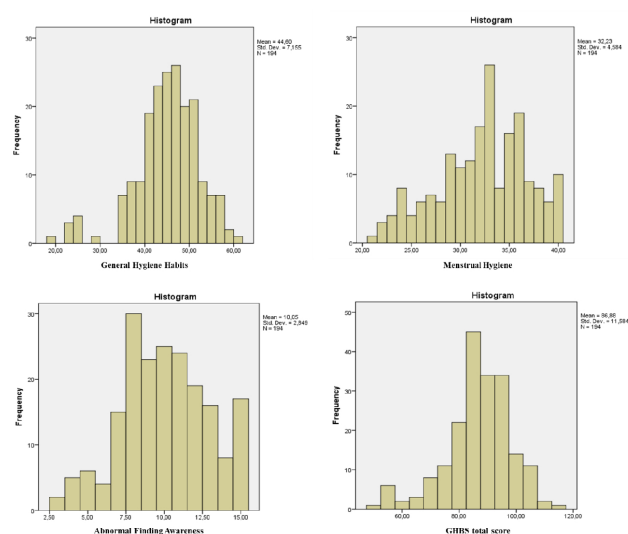


Figure 1 – Normality Distribution of Mean Scores of Students' Genital Hygiene Behaviours Scale

Table 1 Findings Related to Genital Hygiene Habits of Students (N: 194)

Genital Hygiene Habits of Students	Options	n	%
Receiving information about genital care and hygiene	Receiving information	63	32.5
	Not receiving information	131	67.5
*Sources used to obtain information on genital care and hygiene (n:131)	Mother	129	66.5
	Mom and Dad	23	11.9
	Sister, aunt, etc.	12	6.2
	Teacher	6	3.1
	Friend	4	2.1
	Internet, TV	20	10.2
Presence of material used for cleaning the genital area	Using	179	92.3
	Not using	15	7.7
Materials Used in Genital Area Cleaning	Water	25	12.9
	Shower Gel	59	30.4
	Soap	27	13.9
	Waxing	33	17.0
	Razor blade	9	4.6
	Depilatory cream	15	7.7
	Other (pads, wipes, napkins)	11	5.7
	Not using	15	7.7
How to bathe during menstrual bleeding	Standing shower	177	91.2
	Sitting	17	8.8
Experiencing genital infections	Never experienced	172	88.7
	Experienced	22	11.3
Thinking that sufficient training on hygiene is provided at school or in classes	Thinking they are sufficient	39	20.1
	Thinking they are insufficient	155	79.9
Thinking that the school has sufficient facilities to ensure menstrual hygiene	Thinking they are sufficient	26	13.4
	Thinking they are insufficient	168	86.6
Total		194	100

*More than one option is marked.

Results

The average age of the students participating in the study was 15.74±1.1 years, 42.3% of the students were in the 10th grade, 61.8% were studying at an Anatolian High School in Vize, 70.6% of the student's mothers, and 59.8% of the students' fathers had primary education. It was found that 70.6% of the participants lived in the district, 70.6% had an income equal to their expenses, 88.1% lived with their parents, 41.8% of their mothers, and 88.1% of their fathers were employed.

It was determined that 67.5% of the students did not receive information about genital care and hygiene, and 66.5% of those who received information received it only from their mothers. It was determined that 92.3% of the students used materials for cleaning the genital area, 12.9% of the students used water, 30.4% shower gel, 13.9% soap, 17% waxing, 4.6% razor, 7.7% depilatory cream and 5.7% other products (pads, wipes, napkins) for cleaning the genital area. It was observed that 91.2% of the students took a standing shower during menstrual bleeding, 88.7% had never experienced genital infections, 79.9% thought that insufficient education was given about hygiene in school activities or lessons, and 86.6% believed that the facilities available at school to ensure menstrual hygiene were inadequate (Table 1).

The students who participated in the study scored an average of 44.60±7.1 points in the General Hygiene Habits Subscale, 32.23±4.6 points in the Menstrual Hygiene Subscale, and 10.05±2.8 points in the Abnormal Finding Awareness Subscale of the Genital Hygiene Behaviors Scale. The mean total

score of the Genital Hygiene Behavior Scale was 86.88±11.6. It was determined that the students scored above the mean value in the Genital Hygiene Behaviors Scale (min:50; max:113), and their genital hygiene behaviors were positive (Table 2).

It was determined that the student's grades, the school they attended, the father's educational status (except for the menstrual hygiene sub-dimension of the scale), and the place where they lived did not affect their genital hygiene behaviors (p>0.05). It was observed that students whose mothers were illiterate had lower mean scores in the total and General Hygiene Habits and Menstrual Hygiene Sub-dimension of the Genital Hygiene Behaviors Scale, and students whose fathers were illiterate had lower mean scores in the Menstrual Hygiene Sub-dimension of

Table 2 Distribution of the Mean Scores of the Genital Hygiene Behavior Scale of the Students (N: 194)

Genital Hygiene Behavior Scale	Mean±SD	Min.-Max
Genital Hygiene Behavior Scale General	86.88±11.6	50-113
Scale Sub-Dimensions	General Hygiene Habits	44.60±7.1 19-60
	Menstrual Hygiene	32.23±4.6 21-40
	Abnormal Finding Awareness	10.05±2.8 3-15

Mean: Mean, SD: Standard deviation, Min: Minimum, Max: Maximum

the Genital Hygiene Behaviors Scale than the others, and these situations showed significance ($p=.019$, $p=.014$, $p=.004$, $p=.021$; $p<0.05$, respectively). It was observed that the student's general hygiene and menstrual hygiene habits were negatively affected as the educational level of their mothers decreased, and menstrual hygiene habits were negatively affected as the academic level of their fathers decreased (Table 3).

It was found that those whose income was higher than their expenditures scored higher on the overall Genital Hygiene Behaviors Scale (except the mean scores on the Awareness of Abnormal Findings Subdimension) and on the General Hygiene Habits and Menstrual Hygiene Subdimension, and there was a significant difference between the groups ($p=.005$, $p=.017$, $p=.000$; $p<0.05$, respectively) (Table 3).

Table 3 Comparison of Students' Descriptive Characteristics with Mean Scores of Genital Hygiene Behaviors Scale (N:194)

Descriptive Characteristics of the Students		General Hygiene Habits				Menstrual Hygiene				Abnormal Finding Awareness				GHBS total score			
		Mean \pm SD	Med	Int. ran	U/ χ^2 P	Mean \pm SD	Med	Int. ran	U/ χ^2 P	Mean \pm SD	Med	Int. ran	U/ χ^2 P	Mean \pm SD	Med	Int. ran	U/ χ^2 P
Grade	9th grade	43.39 \pm 8.9	44.00	10.00	3.455* .327	31.69 \pm 5.1	33.00	8.00	1.312* .726	9.61 \pm 2.5	9.00	3.00	7.004* .072	84.69 \pm 14.3	87.00	18.00	4.289* .232
	10th grade	44.35 \pm 6.2	45.00	6.25		32.13 \pm 4.1	32.00	7.00		9.83 \pm 2.8	10.00	4.00		86.32 \pm 9.7	87.00	8.50	
	11th grade	45.65 \pm 6.6	46.50	9.00		32.74 \pm 4.9	33.00	5.25		10.52 \pm 3.0	11.00	4.25		88.91 \pm 11.3	89.50	13.00	
	12th grade	46.87 \pm 6.4	47.00	8.00		33.00 \pm 4.1	33.00	5.00		11.27 \pm 3.2	11.00	5.00		91.13 \pm 10.7	91.00	20.00	
The school you are studying at	An Anatolian High School in Vize	45.15 \pm 5.9	45.00	8.00	1.371* .712	32.88 \pm 4.0	33.00	6.00	4.746* .191	10.05 \pm 2.9	10.00	4.00	1.409* .703	88.08 \pm 9.8	88.00	12.00	.732* .866
	A Vocational and Technical Anatolian High School in Vize	43.74 \pm 10.7	47.00	9,25		30.92 \pm 5.7	32.00	9.25		9.66 \pm 2.9	10.00	3.00		84.31 \pm 16.3	87.00	16.50	
	An Anatolian Imam Hatip High School in Vize	43.83 \pm 6.6	45.00	7.50		31.12 \pm 4.7	32.00	7.75		10.25 \pm 2.5	10.00	3.75		85.21 \pm 11.1	88.50	16.00	
	Another Anatolian High School in Vize	43.42 \pm 5.8	45.50	6.75		32.00 \pm 4.8	32.00	7.25		10.83 \pm 2.3	10.50	4.00		86.25 \pm 10.1	87.00	11.25	
Mother's education level	Illiterate	34.33 \pm 7.7	35.00	13.00	15.322* .004**	25.83 \pm 3.7	24.50	7.00	12.56* .014*	9.33 \pm 2.2	8.00	3.50	1.600* .809	69.50 \pm 12.2	68.00	21.75	11.840* .019*
	Can read and write	51.00 \pm 6.0	51.00	-		31.00 \pm 6.9	27.00	-		10.33 \pm 0.6	10.00	-		92.33 \pm 3.8	94.00	-	
	Primary education	44.34 \pm 7.1	45.00	8.00		32.26 \pm 4.4	33.00	5.00		10.09 \pm 2.8	10.00	4.00		86.70 \pm 11.5	87.00	12.50	
	High School	46.30 \pm 6.2	46.50	7.00		32.85 \pm 4.5	33.00	7.25		9.91 \pm 3.1	10.00	4.25		89.06 \pm 10.4	90.00	10.50	
	University and above	44.50 \pm 9.2	44.50	-		36.50 \pm 0.7	36.50	-		11.50 \pm 0.7	11.50	-		92.50 \pm 10.6	92.50	-	
Father's education level	Illiterate	26.50 \pm 3.5	26.50	-	7.168* .127	24.00 \pm 0	24.00	-	11.563* .021*	8.00 \pm 0	8.00	-	2.478* .649	58.50 \pm 3.5	58.50	-	8.145* .086
	Can read and write	40.00 \pm 0	40.00	-		29.00 \pm 0	29.00	-		9.00 \pm 0	9.00	-		78.00 \pm 0	78.00	-	
	Primary education	44.60 \pm 7.3	45.00	8.00		31.80 \pm 4.7	32.50	6.00		10.09 \pm 2.9	10.00	4.00		86.49 \pm 11.9	87.00	11.75	
	High School	45.01 \pm 6.6	45.50	9.00		32.94 \pm 4.2	33.00	6.00		10.11 \pm 2.9	10.00	4.00		88.07 \pm 10.4	88.50	13.25	
	University and above	47.00 \pm 2.9	47.00	5.00		36.00 \pm 3.0	37.00	5.50		9.20 \pm 2.2	10.00	4.00		92.20 \pm 6.7	92.00	12.50	
Place of residence	City Center	45.57 \pm 6.4	46.00	9.00	.766* .682	32.29 \pm 4.7	34.00	8.00	.233* .890	9.28 \pm 2.9	10.00	5.00	1.296* .523	87.14 \pm 9.5	86.00	13.00	.247* .884
	District	44.83 \pm 7.3	45.00	9.00		32.17 \pm 4.5	33.00	7.00		10.21 \pm 2.8	10.00	4.00		87.21 \pm 11.8	88.00	12.00	
	Village	43.84 \pm 6.9	45.00	7.00		32.38 \pm 4.8	33.00	6.75		9.70 \pm 2.9	9.00	4.00		85.9 \pm 11.1	87.00	15.25	
Monthly income	Income less than expenditure	41.65 \pm 8.5	43.00	12.00	8.186* .017*	29.43 \pm 5.2	29.00	9.00	16.559* .000***	9.61 \pm 1.8	9.00	3.00	1.327* .515	80.70 \pm 13.3	85.00	18.00	10.682* .005**
	Income equal to expenditure	44.37 \pm 7.2	45.00	8.00		32.09 \pm 4.5	32.00	6.00		10.15 \pm 2.9	10.00	4.00		86.62 \pm 11.6	87.00	13.50	
	Income more than expenditure	47.53 \pm 4.4	47.00	5.00		34.65 \pm 3.4	35.50	5.00		9.91 \pm 3.2	10.00	5.25		92.09 \pm 7.8	91.50	9.50	
Who do you live with	Together with mom and dad	44.65 \pm 7.2	45.00	8.00	2.430* .119	32.08 \pm 4.5	33.00	6.00	5.547* .019*	10.10 \pm 2.8	10.00	4.00	.045* .832	86.82 \pm 11.5	87.00	12.00	3.899* .048*
	Only with the mother or only with the father	47.50 \pm 4.5	49.00	5.75		35.00 \pm 4.4	36.00	5.00		10.08 \pm 3.3	10.00	4.75		92.58 \pm 9.6	94.00	14.75	
	Other	40.73 \pm 7.9	41.00	13.00		31.54 \pm 6.1	32.00	9.00		9.18 \pm 2.3	9.00	4.00		81.45 \pm 13.3	85.00	19.00	

Mean: Mean, SD: Standard Deviation; Med: Median Interquartile range; Int.ran; Δ Mann-Whitney U test, &Kruskal-Wallis Test, * $p<0.05$; ** $p<0.001$; *** $p<0.001$

It was found that the mean scores of the students who lived with only their mother or only their father were higher than those who lived with their mother and father or other family members, and there was a significant difference between the groups

($p=.048$, $p=.019$; $p<0.05$, respectively). It was determined that the genital hygiene behaviors and menstrual hygiene of the students living with only their mother or only their father were more optimistic (Table 3).

Table 4

Comparison of Findings Related to Genital Hygiene Habits of Students with Genital Hygiene Behaviors Scale (N: 194)

Genital Hygiene Habits		General Hygiene Habits				Menstrual Hygiene				Abnormal Finding Awareness				GHBS total score			
		Mean ±SD	Med	Int. ran	U/ χ^2 P	Mean ±SD	Med	Int. ran	U/ χ^2 P	Mean ±SD	Med	Int. ran	U/ χ^2 P	Mean ±SD	Med	Int. ran	U/ χ^2 P
Receiving information about genital care and hygiene	Receiving information	45.44±6.8	46.00	8.00	3619.50Δ .165	33.03±4.0	33.00	5.00	3573.00Δ .130	9.76±2.7	10.00	4.00	3716.50Δ .260	88.24±10.3	88.00	10.00	3746.50Δ .299
	Not receiving information	44.20±7.3	45.00	8.00		31.84±4.8	32.00	7.00		10.18±2.9	10.00	4.00		86.22±11.6	87.00	15.00	
Resources used to obtain information on genital care and hygiene	Mother	44.57±7.1	45.00	8.50	4.168& .525	32.26±4.4	33.00	7.00	3.171& .674	9.95±2.7	10.00	4.00	10.15& .071	86.77±11.4	88.00	13.00	6.288& .279
	Mom and Dad	45.74±5.9	46.00	8.00		33.39±4.3	33.00	5.00		11.48±2.8	12.00	5.00		90.61±10.1	89.00	14.00	
	Sister, aunt, etc.	43.83±9.9	43.00	13.25		31.67±5.3	31.50	8.25		10.00±2.6	9.50	2.00		85.50±14.7	88.50	18.00	
	Teacher	42.83±11.0	44.00	14.25		31.67±5.0	31.50	6.75		10.00±3.0	9.00	5.00		84.50±15.2	85.00	16.25	
	Friend	49.00±4.7	48.50	8.50		33.50±3.0	32.00	4.50		11.50±3.5	11.50	6.50		94.00±9.9	93.50	18.00	
	Internet, TV	43.65±5.9	45.00	8.25		30.95±5.6	31.00	10.75		8.75±3.1	8.500	3.75		83.35±11.2	84.00	17.25	
Presence of material used for cleaning the genital area	Using	44.65±7.3	45.00	8.00	1249.50Δ .656	32.11±4.6	33.00	7.00	1063.00Δ .180	10.04±2.8	10.00	4.00	1326.50Δ .939	86.81±11.7	87.00	13.00	1250.50Δ .659
	Not using	44.00±5.8	45.00	9.00		33.60±3.6	34.00	3.00		10.07±3.6	9.00	5.00		87.67±10.0	89.00	13.00	
How to bathe during menstrual bleedin	Standing show	44.64±7.4	45.00	9.00	1389.50Δ .602	32.38±4.6	33.00	7.00	1208.00Δ .179	10.09±2.9	10.00	4.00	1371.50Δ .545	87.11±11.8	88.00	13.00	1262.00Δ .272
	Experienced	44.23±4.6	46.00	5.00		30.65±4.8	32.00	6.50		9.59±2.3	9.00	4.00		84.47±9.3	87.00	10.50	
Experiencing genital infections	Never Experienced	44.65±6.6	45.00	8.00	1812.50Δ .748	32.31±4.4	33.00	6.75	1779.50Δ .649	9.95±2.8	10.00	4.00	1613.50Δ .258	86.91±10.8	87.00	12.00	1817.00Δ .762
	Receiving information	44.23±10.5	46.00	13.25		31.54±6.0	32.00	11.25		10.82±2.8	10.00	5.25		86.59±17.0	88.00	22.25	
Thinking that sufficient training on hygiene is provided at school or in classes	Thinking that they are sufficient	45.79±8.3	47.00	8.00	2404.00Δ .048*	33.15±4.9	34.00	7.00	2498.50Δ .094	11.03±2.8	11.00	5.00	2309.50Δ .022*	89.97±13.6	94.00	12.00	2192.50Δ .008
	Thinking that they are insufficient	44.30±6.8	45.00	8.00		31.99±4.5	32.00	7.00		9.80±2.8	10.00	4.00		86.10±10.9	87.00	12.00	
Thinking that the school has sufficient facilities to ensure menstrual hygiene	Thinking that they are sufficient	44.23±7.9	46.00	7.25	2065.00Δ .655	31.69±4.7	33.00	7.25	2062.50Δ .647	10.96±2.7	11.00	5.00	1743.00Δ .096	87.08±13.0	89.00	11.25	2053.00Δ .623
	Thinking that they are insufficient	44.63±7.1	45.00	9.00		32.31±4.6	33.00	7.00		9.90±2.8	10.00	4.00		86.84±11.4	87.00	13.00	

Mean: Mean, SD: Standard Deviation; Med: Median Interquartile range; Int.ran; ΔMann-Whitney U test, &Kruskal-Wallis Test, *p<.05; **p<.001; ***p<.001

It was found that the status of receiving information about genital care and hygiene, the sources used to obtain information, the material used for cleaning the genital area, the way of bathing during menstrual bleeding, the status of experiencing genital infection, and the status of thinking that there were adequate facilities at school to provide menstrual hygiene did not affect the genital hygiene behaviors of the students participating in the study ($p>0.05$, Table 4).

It was found that the mean scores of the students who thought that they were given adequate education about hygiene in school activities or lessons were higher than the students who did not know that they were given sufficient education, and there was a significant difference between the groups ($p=.008$, $p=.048$, $p=.022$; $p<0.05$, respectively). It was observed that genital

hygiene behaviors, general hygiene habits, and awareness of abnormal findings were more positive in students who thought they received adequate hygiene education at school and in classes (Table 4).

It was found that the student's grade, mother's education level, mother's employment status, education status about genital hygiene, and frequency of changing underwear did not affect the use of materials in genital hygiene ($p>0.05$), while the place of residence and the people they lived with affected the use of materials ($p<0.05$, Table 3).

It was found that students living in the city center or district and students living with their parents used materials in the genital area cleaning above the expected values, and there was a significant difference between the groups ($p=.001$, $p=.002$;

Table 5

Comparison of the Relationship of Descriptive Characteristics with the Presence of Materials Used in Genital Area Cleaning (N: 194)

Descriptive Characteristics		Presence of material used for cleaning the genital area		
		Using n(μ)	Not Using n(μ)	χ ² p
Grade	9th grade	48 (47.1)	3(3.9)	3.660 [□] .301
	10th grade	78(75.7)	4(6.3)	
	11th grade	40(42.4)	6(3.6)	
	12th grade	13(13.8)	2(1.2)	
Mother's education level	Illiterate	5(5.5)	1(0.5)	2.031 [□] .730
	Can read and write	3(2.8)	0(0.2)	
	Primary education	125(26)	12(10.6)	
	High School	44(42)	2(3.6)	
	University and above	2(1.8)	0(0.2)	
Place of residence	City Center	7(6.5)	0(5)	14.335 [□] .001**
	District	132(126.4)	5(10.6)	
	Village	40 (46.1)	10(3.9)	
Who do you live with	Together with mom and dad	160(157.8)	11(13.2)	12.351 [□] .002**
	Only with mother or only with father	8(11.1)	4(0.9)	
	Other	11(10.1)	0(0.9)	
Mother's employment status	Working	77(74.7)	4(6.3)	1.521 [□] .217
	Not working	102(104.3)	11(8.7)	
Receiving information about genital care and hygiene	Receiving information	57(58.1)	6(4.9)	.420 [□] .517
	Not receiving information	122(120.9)	9(10.1)	
Frequency of changing underwear	I do not agree at all	3(2.8)	0(0.2)	3.051 [□] .549
	Disagree	12(12.0)	1(1.0)	
	Undecided	22(23.1)	3(1.9)	
	I agree.	72(69.2)	3(5.8)	
	Completely Agree	70(72.0)	8(6.0)	

[□]The values given in brackets are expected values. [□] Pearson Chi-Square, #Fisher's Exact test ** p<.001

p<0.05, respectively). It was observed that students living in the city center or district had higher rates of using materials in genital area cleaning than students living in the village, and students living with their parents had higher rates of using materials in genital area cleaning than those living with a single parent or other family members.

It was found that there was no statistically significant difference between the student's grade, mother's education level, place of residence, cohabitant, mother's employment status, receiving education about genital hygiene, and frequency of changing underwear and experiencing genital infection (p=.673, p=.425, p=.388, p=.223, p=.144, p=.679, p=.774; p>0.05, respectively) (Table 5).

Discussion

It was found that nearly half of student's mothers (41.8%) and all of their fathers (88.1%) were employed. According to Turkiye Demographic and Health Survey (TDHS) 2018 data, it was determined that 32% of married women aged 15-49 and 94% of their husbands worked in the last one year before the study [11]. When the findings obtained from the study are compared with the TDHS, it is seen that the employment status of women is slightly higher, and that of men is somewhat lower. This is thought to be due to the higher level of education and the average age at marriage in the western part of the country and the encouragement of women to start working before this period.

Parents are thought to play a role in teaching genital hygiene habits from childhood, particularly concerning the

mother's awareness and education level [12]. For this reason, mothers have essential duties in gaining hygiene habits starting from childhood [13]. It was observed that the education level of the mothers of 70.6% and the fathers of 59.8% of the students in the study was primary education; 67.5% did not receive information about genital care and hygiene, and 66.5% received information only from their mothers (Tables 1 and 2). In the literature, it is reported that women received genital hygiene education in a wide range of 40.1%-91.9%. In addition, in this study, it was also reported that 51.5% of those who received education received it from healthcare personnel [14]. In the literature, a study also shows that almost all women have not received training on genital hygiene before [15]. Another study revealed that the most important person who provided education about genital and menstrual hygiene was their mother [16]. Considering social roles and beliefs, mothers are generally seen as responsible for child care, hygiene, and education issues. In parallel with the literature [13,16], it was observed in this study that mothers gave more information to children about genital hygiene and care, and it is thought that increasing education and information on genital hygiene will benefit both mothers and girls who are thought to educate them.

Since keeping the genital area moist will create a suitable environment for the growth of microorganisms, it is recommended to dry the genital area with soft and perfume-free toilet paper from front to back at once after washing with water [14,17-20]. It is thought that providing genital hygiene after using the toilet only with toilet paper without using water is not sufficient for cleaning the genital area and increases the likelihood of genital infection [21]. When the distribution of the student's answers to

the questions about genital care and hygiene was analyzed, it was determined that almost all (92.3%) used some kind of material for genital hygiene cleaning. When the hygiene materials used by the students were examined, it was seen that shower gel, wax, soap, water only, depilatory cream, pads, wipes, napkins, and razors were the most common. Serhatlioglu and Yilmaz also reported that soap, washing gel, foam, wet wipes, deodorant, antiseptic solution, moisturizer, depilatory cream, pads, and toilet papers were among the products used in genital hygiene interventions [22]. In the studies in the literature, it has been reported that the rates of the pad, wax, razor, water only, soap or water, and toilet paper use are high, while the use of shower gel is lower [1,3-5,12-17,19,20,23-34]. When the findings of the study are compared with the literature, it's seen that shower gel, wax/razor blade, soap and pads are included in genital hygiene cleaning, although the order is different.

It is recommended that women take a standing shower, especially during menstruation, to eliminate possible foul odors, alleviate pelvic discomfort, and relax the woman. It is stated that showering while sitting may increase the risk of genital infection due to dirty water accumulating in the genital area [23,25]. In this study, it was found that almost all of the students (91.2%) took a standing shower during menstrual bleeding, and the majority of them (88.7%) had never experienced genital infections. Previous studies have also reported high rates of standing showering during menstruation [1,19,20,23]. It is stated that urogenital infections are the leading cause of hospitalization in reproductive health [14]. Unsal (2010) reported that 9.1% of the students had previously experienced genital infections. The results of the study were found to be compatible with the literature. As it is known, bathing is a part of hygiene behaviors and helps to remove sweat, dead cells, oil, and microorganisms from the skin [20]. Showering while standing also prevents genital infections. The fact that the students in the study attached importance to vaginal hygiene and had a high rate of standing showering may have led to a lower likelihood of genital infections.

In the study, it was observed that the majority of the students (79.9%) thought that there was inadequate education about hygiene at school or in classes, and (86.6%) thought that there were not enough facilities at school to ensure menstrual hygiene. In a study conducted by Unsal (2010) with university students, it was found that the majority of students (90.4%) wanted to receive information about genital hygiene from health personnel [16]. When the study results are compared with the literature, it suggests that students are not given adequate education about hygiene in schools. It is thought that it would be beneficial to create information and training programs in hospitals, health institutions, or schools for individuals who want the correct information about genital hygiene. In addition, adding information about hygiene to the curriculum of both pre-service teachers and all educational institutions affiliated with the Ministry of National Education will be beneficial in raising public awareness and reducing infections.

It was found that the mean scores of the students who participated in the study from the Genital Hygiene Behaviors Scale were higher than the mean value (86.88±11.6 points from the overall Genital Hygiene Behaviors Scale; 44.60±7.1 points from the General Hygiene Habits Subscale; 32.23±4.6 points from the Menstrual Hygiene Subscale; and 10.05±2.8 points from the Abnormal Finding Awareness Subscale) and their genital hygiene behaviors were positive. In many studies involving different age groups in the literature, the mean scores of the Genital Hygiene Behaviors Scale were found to be between 68.63±4.83 and 95.25±8.57 points [3,20,33,35]. In

studies conducted with adolescent women, the mean scores of the Genital Hygiene Behaviors Scale were 85.3±10.1 and 79.28±6.80 [36, 37]. In studies conducted with students studying in the field of health, it was found that the mean score of general hygiene habits of the Genital Hygiene Behaviors Scale was higher than other students, but the mean scores of menstrual hygiene habits and abnormal finding awareness were similar [12,20,33,38]. Our study result is consistent with other studies. In addition, the fact that the general hygiene scores of students studying health are higher than the others shows that it is directly proportional to their education. These positive hygiene behaviors are thought to be due to increased education levels, ease of access to hygienic products, technological developments, and increased use.

It was observed that the student's grade, school, and place of residence did not affect their genital hygiene behaviors. Still, the student's general and menstrual hygiene habits were negatively affected as their mothers' education level decreased. Menstrual hygiene habits were negatively affected as the education level of their fathers decreased. Looking at the studies conducted in the literature in this field, it was found that the General Hygiene Habits and menstrual hygiene scoring of adolescent female students with high maternal education level was higher than the General Hygiene Habits scoring of adolescent female students with low maternal education level [32,37]. In many studies, it is also stated that genital hygiene behaviors are not affected by socio-demographic parameters [2,12,36].

It was found that 70.6% of the participants' family income was equal to their expenses, and it was determined that the student's general hygiene and menstrual hygiene habits increased positively as the income level of the families increased. As the income status increases, the higher likelihood of meeting the needs in terms of providing hygienic materials, using better quality products, training, and service procurement may support students to manage general hygiene and genital hygiene more healthily.

It was observed that the majority of the students (88.1%) lived with their parents. It was found that genital hygiene behaviors and menstrual hygiene of the students living with one of their parents were more positive than the others. This result may be due to the increased sense of responsibility attributed to a single parent or because the other parent may react to the parent who has custody in case of any illness in the child due to inadequate care and may even use this situation against them.

It was found that the students' status of receiving information about genital care and hygiene, information sources, the type of material used for cleaning the genital area, the kind of bathing during menstruation, the status of experiencing genital tract infection, and the status of thinking that there were adequate opportunities to provide menstrual hygiene at school did not affect general and menstrual hygiene behaviors and awareness of abnormal findings. It was observed that the genital hygiene behaviors, general hygiene habits, and abnormal finding awareness of the students who thought that the education at school was sufficient to provide menstrual hygiene were more positive than the others. To ensure menstrual hygiene, schools should have gender-based toilets; all toilets should be usable, bright, and clean; toilet doors should be lockable; there should be a trash bin and toilet paper in the bathroom; flushing and hand washing faucets should be in working order, water, soap, and paper towels should be sufficient to meet the needs. In addition, there should be posters prepared by the Ministry of Health about proper hand washing in the toilets, and a school health nurse should be on duty in schools. In cases where these conditions are not met, it is shown in the study that students in their menstrual

period do not want to go to school because they do not feel comfortable, cannot manage hygienic practices effectively in this process, and their absenteeism increases [32]. In all schools within the scope of the sample, it was observed that the facilities other than the school health nurse were complete. The availability of adequate facilities supports more positive genital hygiene behaviors and general hygiene habits. In order to further increase this favorable situation, sanitary pad vending machines can be added to schools to meet the urgent need for hygienic pads that may occur due to irregular menstruation bleeding, which can be seen more frequently, especially in adolescence.

No correlation was found between the students' grades, mother's education level, mother's employment status, education about genital hygiene, and frequency of changing underwear and using preferred materials for genital hygiene. It was found that students living in the city center and district had higher rates of using materials for genital hygiene than students living in the village. This is thought to be related to the opportunities in the settlements.

It was observed that the student's experience of genital infection was not affected by class, mother's education, place of residence, cohabitant, mother's employment status, education about genital hygiene, and frequency of changing underwear. Individuals may have difficulty meeting their hygienic needs during the menstrual cycle's first years. As the education level of mothers, who are thought to be responsible for the education of most of them, increases, correct guidance can be given. Considering where individuals live, access to and provision of hygienic facilities also becomes more accessible. Receiving education about genital hygiene also positively affects genital health. Considering all these, it is expected that the likelihood of genital infection will decrease. However, the results of the study showed that these were ineffective. Apart from these, it is reported that changing underwear daily, if possible, is essential in preventing infections. It is also stated that the frequency of changing underwear is negatively correlated with vaginal infection [1,29]. In a study parallel to our study, contrary to

the information in the literature, no relationship between the frequency of changing underwear and the frequency of genital infections was shown [29].

Conclusion

As a result of the study conducted to evaluate the genital hygiene management of female secondary school students, it was found that more than half of the students did not receive information about genital care and hygiene; they thought that the education on hygiene at school and the facilities available to ensure hygiene were insufficient, almost all of them used materials for cleaning the genital area, they showered standing up during menstrual bleeding, the majority of them had never experienced genital infection, and their genital hygiene behaviors were positive. It was found that hygiene behaviors decreased as maternal and paternal education decreased; living with a single parent, thinking that they had received adequate education on hygiene, and increasing income level increased hygiene behaviors. It was found that the place where the students lived and the people they lived with affected the use of materials in genital hygiene cleaning.

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References

1. Bilgic, D., Yuksel, P., Gulhan, H., Sirin, F., & Uygun, H. (2018). Genital hygiene behaviors and resulting health status of female students staying in a university dormitory. *Acibadem University Health Sciences Journal*, (3), 478-485. <http://journal.acibadem.edu.tr/en/download/article-file/1701834>
2. Bulut, A., Yigitbas, C., & Celik, G. (2019). Genital hygiene behaviors from perspective of nursing students. *Medical Journal of Ankara Training and Research Hospital*, 52(3), 227-232. <https://dergipark.org.tr/en/pub/aeahtd/issue/50839/571280>
3. Aydin Kartal, Y., Engin, B., & Teke, B. (2020). Genital hygiene behaviors of midwifery students. *International Journal of Caring Sciences*, 13(3), 2029-2036. http://www.internationaljournalofcaringsciences.org/docs/56_kartal_original_13_3.pdf
4. Bas, G. N., Karatay, G., & Arkan, D. (2016). Genital health status among female students staying in a dormitory of student loans and dormitories institution and affecting factors. *Journal of Continuing Medical Education*, 25(3), 101-109. <https://www.acarindex.com/pdfler/acarindex-2474e79d-f1fb.pdf>
5. Sen, S., & Er Guneri, S. (2020). Genital hygiene practices and awareness of student nurses. *Manisa Celal Bayar University Journal of Institute of Health Science*, 7(2), 96-101. <https://dergipark.org.tr/en/download/article-file/1175543>
6. Karahan, N. (2017). Development of a genital hygiene behavior scale: Validity and reliability study. *Istanbul Medical Journal*, 18(3), 157-62. doi: 10.5152/imj.2017.82957
7. Simsek Kuçukkelepce, D. S., Sahin, T., & Aydın Ozkan, S. A. (2019). The effect of genital hygiene education on genital hygiene behaviors of secondary school female students: The approach to protection and promotion of reproductive health. *Health and Society*, 29(3), 76-83.
8. Ilankoon, M. P. S., Goonewardena, C. S. E., Fernandopulle, R. C., & Perera, P. P. R. (2017). Women's knowledge and experience of abnormal vaginal discharge living in estates in Colombo District, Sri Lanka. *International Journal of Women's Health*, 5(2), 90-96. doi:10.15296/ijwhr.2017.17
9. Van Eijk, A. M., Sivakami, M., Thakkar, M. B., Bauman, A., Laserson, K. F., Coates, S., & Phillips-Howard, P. A. (2016). Menstrual hygiene management among adolescent girls in India: A systematic review and meta-analysis. *BMJ Open*, 6(3):e010290. doi:10.1136/bmjopen-2015-010290.

10. Kuhlmann, A. S., Henry, K., & Wall, L. L. (2017). Menstrual hygiene management in resource-poor countries. *Obstetrical & Gynecological Survey*, 72(6), 356–376. doi:10.1097/OGX.0000000000000443
11. Türkiye Demographic and Health Survey (TDHS). (2018). Retrieved from http://www.sek.gov.tr/wp-content/uploads/2020/08/TNSA2018_ana_Rapor.pdf
12. Demirag, H., Hintistan, S., Cin, A., & Tuncay, B. (2019). Investigation of genital hygiene behaviors of health services vocational school students. *Bozok Medical Journal*, 9(1), 42-50. <https://dergipark.org.tr/tr/download/article-file/679876>
13. Koyun, A., Ozpulat, F., & Ozvaris, S. B. (2013). Training program development and evaluation process: Secondary education for girl students " genital Hygiene " Education Program. *Gumushane University Journal of Health Sciences*, 2(4), 443-459. <https://dergipark.org.tr/tr/pub/gumussagbil/issue/7502/98893>
14. Turkmen, H., & Karaguzel, E. N. (2021). Factors affecting youth's genital hygiene attitudes. *Journal of Continuing Medical Education*, 30(3), 190-199. <https://dergipark.org.tr/en/pub/sted/issue/63584/767685>
15. Toraman, B., Ildan Calm, S., & Bicici, S. (2021). The genital hygiene behavior of women living in a women's shelter: The case of Manisa province. *Samsun Journal of Health Sciences*, 6(3), 625-640. <https://dergipark.org.tr/en/pub/jshs/issue/66509/986723>
16. Unsal, A. (2010). Attitudes about genital hygiene of university female students. *Firat Journal of Health Services*, 5(13), 79-93. https://www.researchgate.net/profile/Ayla-Uensal/publication/341379237_Universitede_Okuyan_Kiz_Ogrencilerin_Genital_Hijyen_Davranislari/links/5ebd49f7458515626ca818d0/Ueniversitede-Okuyan-Kiz-Ogrencilerin-Genital-Hijyen-Davranislari.pdf
17. Timur, S. (2010). Genital hygiene behaviors of the female students who stay at a university student hostel. *Medical Sciences*, 5(4), 39-48. <https://dergipark.org.tr/tr/download/article-file/186913>
18. Yazici, S., & Cuvadar, A. (2019). Prevention of genital system infections and midwifery approaches. *Journal of Health Profession Research*, 1(1), 33-37. <https://dergipark.org.tr/tr/pub/jhpr/issue/49226/581449>
19. Ceylan, S. S. (2021). A danger to adolescent health: How reliable is the information on the Turkish web pages regarding menstruation hygiene? *Sakarya Medical Journal*, 11(2), 366-372. <https://dergipark.org.tr/tr/download/article-file/1341720>
20. Solt, A., Hur, S., Karaman, S., Avci, N., & Aka, N. (2022). Effects of genital hygiene behaviors of midwifery and nursing students on vaginal and urinary tract infections. *Istanbul Gelisim University Journal of Health Sciences*, (16), 202-222. <https://dergipark.org.tr/en/pub/igusabder/issue/69769/991045>
21. Sut, H. K. (2016). Investigation of the relationship between genital hygiene behaviors and genital infection in women aged 18-49. *Journal of Duzce University Health Sciences Institute*, 6(1), 8-13. <https://dergipark.org.tr/tr/pub/duzcesbed/issue/14253/66683>
22. Serhatlioglu, S., & Yilmaz, E. (2022). Media influence on product selection used in genital hygiene practices: Now ads. In A. Dinc (Ed.), *Health & Science 2022: Ebelik-1*, (pp. 143-156). Efe Academic Publishing.
23. Demirtas, B. (2006). Assessment of the knowledge of vulva health of the nursing students. *Journal of Hacettepe School of Nursing*, 13(1), 14-25. <https://dergipark.org.tr/en/pub/hunhemsire/issue/7849/103329>
24. Kostu, N., & Beydag, K. (2009). Genital hygiene practices of women who present to a gynecology clinic. *Journal of Atatürk University School of Nursing*, 12(2), 105-110. <https://dergipark.org.tr/tr/download/article-file/29449>
25. Unsal, A., Ozyazicioglu, N., & Sezgin, S. (2010). Attitudes about genital hygiene of individuals living in one town and nine villages east black sea region. *Journal of Anatolia Nursing and Health Sciences*, 13(2), 12-19. <https://dergipark.org.tr/en/pub/ataunihem/issue/2650/34095>
26. Onal, A. E., Onoglu, N., Babaoglu, A. B., Ozer, C., & Gungor, G. (2011). Some hygiene behaviors and genital infection complaints among 15-49 aged women in a Suburban area of Istanbul. *Nobel Medicus*, 7(2), 96-100.
27. Ozdemir, S., Ortabag, T., Tosun, B., Ozdemir, O., & Bebis, H. (2012). Assessment of the knowledge level and behaviors of students in school of nursing about genital hygiene. *Gülhane Medical Journal*, 54(2), 120-8. doi:10.5455/gulhane.19180
28. Cangol, E., & Tokuc, B. (2013). The evaluation of genital infections and genital hygiene practices of women who applied to gynecology policlinic. *Florence Nightingale Journal of Nursing*, 21(2), 85-91. <https://dergipark.org.tr/tr/pub/fnijn/issue/9010/112440>
29. Sevil, S., Kevser, O., Aleattin, U., Dilek, A., & Tijen, N. (2013). An evaluation of the relationship between genital hygiene practices, genital infection. *Gynecology & Obstetrics*, 3(6), 1-5. doi:10.4172/2161-0932.1000187
30. Topuz, S., Duman, N. B., & Gunes, A. (2015). Genital hygiene practices of female students at first class in the Faculty of Health Sciences. *Turkish Journal of Clinics and Laboratory*, 6(3), 85- 90. <https://search.trdizin.gov.tr/en/yayin/detay/258211/saglik-bilimleri-fakultesi-birinci-siniftaki-kiz-ogrencilerin-genital-hijyen-uygulamalari>
31. Belayneh, Z., & Mekuriaw, B. (2019). Knowledge and menstrual hygiene practice among adolescent school girls in southern Ethiopia: A cross-sectional study. *BMC Public Health*, 19(1), 1595. doi: 10.1186/s12889-019-7973-9.
32. Habtegiorgis, Y., Sisay, T., Kloos, H., Malede, A., Yalaw, M., Arefaynie, M., Dantie, Y., Kefale, B., Tegegne, T. B., Addisu, E., Lingerew, M., Berhanu, L., Berihun, G., Natnael, T., Abebe, M., Feleke, A., Gizeyatu, A., Ademas, A., Fentaw, Z., Yayeh, T. M., ... Adane, M. (2021). Menstrual hygiene practices among high school girls in urban areas in Northeastern Ethiopia: A neglected issue in water, sanitation and hygiene research. *PloS One*, 16(6), e0248825. doi: 10.1371/journal.pone.0248825
33. Tiryaki, S., Gezgin, E., & Goktas, S. (2021). Determination of genital hygiene behaviors of faculty of health sciences students. *Journal of Vocational School of Health Service*, 9(2), 510-522. <https://dergipark.org.tr/en/pub/inonusaglik/issue/62343/843789>
34. Pratibha, S., Nawaz, A. S., & Kumar, A. (2016). Impact of menstrual practices on the health of adolescent girls and the challenges faced in menstrual hygiene management at schools. *National Journal of Community Medicine*, 7(8), 667-671. file:///C:/Users/navci/Downloads/7-8_667-671%20(2).pdf
35. Durmus, M. K., & Zengin, N. (2020). Investigation of genital hygiene behaviors of women. *Journal of Health Professionals Research*, 2(3), 113-120. <https://dergipark.org.tr/en/download/article-file/1209652>
36. Goger, B., & Tuncay, B. (2021). Investigation of personal and genital hygiene behaviors of female students who stayed in boarding during the adolescent period. *Journal of Samsun Health Sciences*, 6(2), 255-269. <https://dergipark.org.tr/tr/download/article-file/1659747>
37. Mamuk, R., Parlan, H., Asif, E., Deveci, M., & Akdeniz, E. (2022). An assessment of menstrual and genital hygiene behaviors among adolescent females at Gazimagusa, Northern Cyprus. *Clinical and Experimental Health Sciences*, 12(1), 185-191. <https://dergipark.org.tr/en/pub/clinexphealthsci/article/909836>
38. Yagiz Altıntas, R., Bakir, S., Gul, I., Suer, N., & Kavlak, O. (2021). The effect of menstrual attitude on genital hygiene behaviors of nursing students. *Turkish Journal of Family Medicine and Primary Care*, 15(3), 568-575. <https://dergipark.org.tr/tr/pub/tjfm/issue/64835/931262>.