

## Research Article

# Determination of Genital Hygiene Behaviors of Women Working in a Factory and Associated Factors



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### ABSTRACT

**Aim:** The aim of this study was to examine the genital hygiene behaviors of women employed in a factory in Türkiye, identifying individual (age, education, income) and environmental (workplace hygiene conditions) factors influencing these behaviors. It also seeks to assess how workplace hygiene impacts women's health and to propose practical recommendations for occupational health nurses.

**Material and Methods:** : This descriptive study was conducted with 181 women working in a factory, selected through purposive sampling, between September 1, 2022, and May 1, 2023. Data were collected through a researcher-developed Personal Information Form and the Genital Hygiene Behavior Inventory. Descriptive statistics (mean, percentage) were used, and independent samples t-tests, chi-square tests, and analysis of variance (ANOVA) were conducted for group comparisons.

**Results:** The mean the Genital Hygiene Behavior Inventory score was 50.65±0.78, indicating suboptimal genital hygiene behaviors. Significant relationships were found between Genital Hygiene Behavior Inventory scores and factors such as parental status, shift hours, income level, menstrual product affordability, and factory toilet hygiene ( $p<0.05$ ).

**Conclusions:** It is recommended that occupational health nurses conduct targeted education programs and collaborate with employers to improve workplace hygiene conditions and provide access to menstrual products.

**Implication for nursing practice/management or policy:** Occupational health nurses should develop workplace-specific education programs to promote genital hygiene and advocate for access to menstrual products. Collaboration with employers is essential to improve sanitation conditions and support women's reproductive health in industrial settings.

**Keywords:** Genital hygiene, Occupational health, Working woman

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## INTRODUCTION

Genital infections are a growing public health concern globally, posing significant threats to women's reproductive health (Hamed, 2015). These infections can result in severe complications such as sepsis, cervical cancer, infertility, and congenital infections in newborns. While these consequences primarily affect individual health, the broader implications on public health systems are profound (Bowen et al., 2019). Poor genital hygiene practices not only increase the risk of personal health issues but also contribute to the spread of sexually transmitted infections (STIs), which can burden healthcare systems and affect community health outcomes. Therefore, understanding and improving genital hygiene behaviors is not just a personal health matter but a critical public health priority (Umami et al., 2022).

The genital hygiene behaviors of women are influenced by individual and environmental factors. Individual factors such as cultural, social, and religious norms, educational level, economic status, and lack of knowledge influence women's genital hygiene practices (Nkamedjie et al., 2019; Yesilcicek et al., 2020). Environmental factors that affect women's genital hygiene behaviors include inadequate infrastructure resources, lack of healthy utility water, shared use of toilets and bathrooms in crowded environments, insufficient number of toilets for people in workplaces, and limited access to toilet paper (Fry et al., 2022). The combined effect of these factors can significantly compromise women's reproductive health, especially in vulnerable populations like factory workers (Karatay & Ozvaris, 2006). Factories are one of the working environments with both individual and environmental risk factors. Female workers may encounter many risk factors in terms of health and hygiene in factories. Unhealthy and unsafe working conditions may increase the physical, chemical, and psycho-social risks women may face. This not only negatively affects the health of women but can also endanger family members' health (Sommer et al., 2021). The duties and responsibilities of occupational health nurses include observing the working environment, identifying risk factors that threaten health, and collaborating with employers to eliminate these risk factors. At the same time, occupational health nurses have important roles and responsibilities in ensuring that employees and their families acquire healthy lifestyle behaviors (T.R. Ministry of Health, 2023). Goal 3.7, part of the Sustainable Development Goals, seeks to guarantee widespread availability of reproductive health services, such as sexual health and family planning, by 2030, while embedding reproductive health into national policies and initiatives (United Nations Development Program Turkey, 2023). To align with this objective, assessing "the genital hygiene practices of women" is crucial for enhancing the reproductive health of female factory workers.

In the literature, studies focusing on the genital hygiene habits of women employed in factories are limited (Nikpour et al., 2020; Sommer et al., 2016). In a qualitative study in which reproductive health problems of shift workers were examined and the sample consisted of women working in hospitals, factories, dormitories, rehabilitation centers, and nursing homes, it was reported that genitourinary problems such as genital itching were more common in shift workers and that shift workers were more likely to use dirty toilets compared to other workers and had limited access to clean bathrooms at work (Nikpour et al., 2020). Since shift work has different rules and regulations for factory workers compared to other business lines, it has been suggested that new studies be carried out for this group of workers (Nikpour et al., 2020; Moran et al., 2020).

Existing literature on genital hygiene among factory-working women is limited, with most studies focusing on general hygiene practices rather than the specific challenges faced in industrial settings. This study is particularly significant as it represents the first research conducted in Türkiye examining the genital hygiene behaviors of female factory workers. By addressing this gap, the study provides valuable insights into both individual and environmental factors influencing women's reproductive health in industrial environments.

### Aim

The aim of this study was to determine the genital hygiene behaviors and related factors of women working in a factory. Understanding these dynamics will provide valuable insights into how workplace conditions and personal circumstances influence women's health behaviors.

### Hypotheses/Study Questions

1. What is the level of genital hygiene behaviors of women working in the factory?
2. What are the factors related to the genital hygiene behaviors of women working in factories?

## MATERIAL and METHODS

### Study Design

The study used a descriptive and correlational design to determine the genital hygiene behaviors and related factors of women working in a factory.

### Study Sample

A total of 200 blue-collar and white-collar women were employed in the factory where the study was conducted. The sample size was determined using the Cochran formula for known populations, which considers the total population size, desired confidence interval, and margin of error. Using this method, a minimum sample size of 166 was calculated based on a 99% confidence interval and a 5% margin of error. To apply this method, the total population (N=200) was used in conjunction with expected response variability, ensuring the sample would adequately represent the population.

Inclusion criteria included being identified as female, working as a blue-collar worker, being literate, aged between 18 and 49, sexually active, and consenting to participate in the study. The research aimed to include the entire eligible population rather than

selecting a random sample. Of the 191 women meeting these criteria, 10 declined participation, resulting in a final sample of 181 women, representing 94.7% of the eligible population.

### Data Collection Tools

Data collection was conducted using a personal information form, developed by the researchers based on relevant literature, along with the *Genital Hygiene Behavior Inventory*. The *Personal Information Form* was designed by the researchers through an examination of the relevant literature (Nikpour et al., 2020; Moran et al., 2020). The form includes 21 questions addressing participants' demographic details (age, duration of employment in the factory, marital status, status of having children, number of children, education status, shift hours, manner of work, income status, status of having financial difficulties in purchasing menstrual products), toilet hygiene status in the factory (availability of paid/free menstrual products in the factory, availability of toilet paper, hand soap, and cleaning in the factory toilets), genital hygiene habits (menstrual product used during menstruation, number of menstrual products changed at home or in the factory in a day, vaginal douching status, products used during vaginal douching, reasons for vaginal douching, status of applying a health institution in case of genital infections).

In 2005, Ege and Eryilmaz developed the *Genital Hygiene Behavior Inventory (GHBI)* to evaluate the genital hygiene habits of sexually active women aged 15 to 49, and also research to confirm the validity and reliability of the instrument. This single-dimensional tool consists of 27 items on a 4-point Likert scale, covering general hygiene, menstrual hygiene, toilet hygiene, and sexual hygiene behaviors. Responses to each item are scored between 1 and 4. GHBI are rated on a "1-never", "2-sometimes", "3-often", and "4-always". Negative items (questions 17, 26, 27) in the inventory are reverse-coded. The score obtained from GHBI shows the level of genital hygiene behavior. The inventory yields a minimum score of 27 and a maximum score of 108. An increase in the total score indicates that the genital hygiene behavior has reached the desired level. It takes approximately 8-10 minutes to fill out the inventory. The Cronbach alpha coefficient of the inventory is 0.8614. In this study, the Cronbach's alpha coefficient was calculated as 0.88.

### Data Collection

To check the content validity of the data collection form to be used in the study, a pilot application was carried out in a different factory located in the city where the research was conducted. The pilot application was conducted with 20 women, representing 10% of the minimum required sample size, who agreed to participate in the study. No changes were made in the data collection form after the pilot application.

The data collection form was delivered in closed envelopes to the human resources by the first researcher to be delivered to the women working as blue-collar workers in the factory on the date determined for research implementation. Since the participants worked in shifts, data collection forms were distributed to the departments by human resources at the beginning of the shift hours. Participants filled out the data collection form during their breaks in approximately 15 minutes. Filled data collection forms were put back in closed envelopes and delivered to human resources. Then the forms were delivered to the first researcher by human resources on the same day or a specified day.

To ensure participant privacy, the forms were anonymous, and participants were instructed to complete them in private spaces (e.g., break rooms or rest areas). Additionally, no identifiable information was collected, and participants were assured that their responses would remain confidential.

### Data Analysis

International Business Machines Statistical Package for the Social Sciences (IBM SPSS) Statistics 26.0 was used for data analysis. Numbers, percentages were used in the evaluation of the data. Descriptive statistics were presented using mean  $\pm$  standard deviation, frequency, percentage, median, and minimum-maximum values. The normality of the numerical variables was checked with the Shapiro-Wilk test, and the homogeneity of inter-group variance was examined with the Levene test. The independent samples t-test and one-way ANOVA were applied to analyze normally distributed data, while the chi-square test was used to assess the relationship between two categorical variables. In case of a significant difference between the groups after the test, the post-hoc Tukey test was applied to identify the group responsible for the observed difference. Statistical significance was taken as  $p < 0.05$ .

### Ethical Considerations

The study's ethical suitability was confirmed through approval obtained from the Hacettepe University Ethics Committee for Non-Interventional Clinical Research (Date: 20.09.2022, Number: 16969557-1633). Additionally, official written authorization was obtained from the factory where the study took place. The research objectives were thoroughly explained to the participating women, and their written consent was secured. Necessary permissions to use the Genital Hygiene Behavior Inventory, developed and validated by the original researchers, were also granted for this study.

### Limitations

Data were collected during participants' work breaks, and face-to-face interaction with participants was not possible due to workplace restrictions prohibiting non-employees from entering the factory floor. This may have limited opportunities to clarify questions or ensure participants' understanding of the forms.

Moreover, the sensitive nature of the research topic may have influenced participants' responses, potentially leading to social desirability bias. While the anonymity of the data collection process aimed to mitigate this effect, it remains a potential limitation.

## RESULTS

Table 1 presents the socio-demographic characteristics of participants. The average age of the women participating in the study was  $35.25 \pm 7.6$  years, and the mean duration of employment in the factory was  $8.02 \pm 6.4$  years. All participants were married; 74.6% had children; 97.1% had 3 children or less. Of the participants, 52.5% were high school graduates; 89% worked during the 09.15-17.15 shift; 38.7% worked in a standing position; 47.5% stated that their monthly income was equal to their expenses; 57.5% stated that they had financial difficulties in purchasing menstrual products.

**Table 1. Socio-demographic Characteristics of Participants (n=181)**

Features	Mean $\pm$ SD	(Min-Max)
Age	35.25 $\pm$ 7.6	(18-48)
Years of work in a factory	8.02 $\pm$ 6.4	1-29
Features	n	%
<b>Marital status</b>		
Married	181	100
<b>Having children</b>		
Yes	135	74.6
No	46	25.4
<b>Number of children</b>		
3 or less	131	97.1
4 or more	4	2.9
<b>Educational status</b>		
Primary school	22	12.2
Middle school	42	23.1
High School	95	52.5
University and above	22	12.2
<b>Shift hours</b>		
09.15 am-05.15 pm	161	89.0
05.15 pm-01.15 am	16	8.8
01.15 am-09.15 am	4	2.2
<b>Way of working</b>		
Sitting work	63	34.8
Standing work	70	38.7
Both sitting and standing work	48	26.5
<b>Income status</b>		
Less than monthly income	62	34.3
Monthly income is equal to expenses	86	47.5
More than the monthly income	33	18.2
<b>Financial difficulty in purchasing menstrual products</b>		
Yes	104	57.5
No	77	42.5

\*SD: Standard deviation; Min: Minimum; Max: Maximum

Table 2 shows the views of the participants on the working conditions of the factory. It was stated that there were no paid or free menstrual products in the factory. Of the participants, 91.7% stated that there was no toilet paper in the factory toilet; 72.9% stated that soap was always available in the toilet; 65.2% stated that the toilets were sometimes clean.

**Table 1. Working Conditions of the Participants (n=181)**

Features	n	%
<b>Availability of paid/free menstrual products in the factory</b>		
Yes	-	-
No	181	100.0
<b>Availability of toilet paper in the factory toilet</b>		
Always	6	3.3
Sometimes	9	5.0
Never	166	91.7
<b>Availability of soap in the factory toilet</b>		
Always	132	72.9
Sometimes	45	24.9
Never	4	2.2
<b>Cleanliness assessment of the factory toilet</b>		
Always	15	8.3
Sometimes	118	65.2
Never	48	26.5

Table 3 shows the findings regarding the menstrual product evaluation of the participants. While working in the factory, all participants used sanitary pads during the menstruation period; 84.5% changed 3 menstrual products or fewer a day on working days in the factory; 58.5% changed 3 menstrual products or less a day on non-working days in the factory. 84.5% of the participants had a vaginal douching habit. Of those who performed vaginal douching, 66.1% used only water to douche; 69.9% stated that they douched in the bathroom; 34.6% douched after the toilet; 15% douched after the menstrual period; 7.9% douched in case of infection. A total of 64.1% of the participants reported seeking care at a health institution when experiencing a genital infection. The mean GHBI score of the participants was 50.65±0.78.

**Table 3. Menstrual Product Evaluation and Genital Hygiene Habits of the Participants (n=181)**

Features	n	%
<b>The product used during the menstrual period</b>		
Sanitary pad	181	100.0
Others(Cloth-Towel/Bumper/Piece Container)	-	-
<b>Frequency of menstrual product replacement in a factory-worked day</b>		
Changing 3 or less menstrual products per day	153	84.5
Changing menstrual products of 4 or more per day	28	15.5
<b>Frequency of menstrual product change on a non-working day at the factory</b>		
Changing 3 or less menstrual products per day	106	58.5
Changing menstrual products of 4 or more per day	75	41.5
<b>Vaginal douching</b>		
Yes	153	84.5
No	28	15.5
<b>Products used in vaginal douching*</b>		
Water	101	66.1
Soap/Shower Gel/ Shampoo with Water	52	33.9
<b>Vaginal douching in the bathroom*</b>		
Yes	107	69.9
No	46	30.1
<b>Vaginal douching after sexual intercourse*</b>		
Yes	26	17.0
No	127	83.0
<b>Vaginal douching after toilet*</b>		
Yes	53	34.6
No	100	65.4
<b>Vaginal douching after menstrual period*</b>		
Yes	23	15.0
No	130	85.0
<b>Vaginal douching in case of infection*</b>		
Yes	12	7.9
No	141	92.1
<b>The situation of applying to the health institution in case of infection in the genital area</b>		
Yes	116	64.1
No	65	35.9

\*153 individuals performing vaginal douching

Table 4 displays the sociodemographic characteristics of the participants along with the findings related to the average scores on the Genital Hygiene Behavior Inventory. There was a significant relationship between the participants' status of having children

(51.61±10.45), shift hours (51.32±10.65), monthly income status (54.12±11.73), and the status of having financial difficulties in purchasing menstrual products (49.66±10.41) and the mean GHBI score ( $p<0.05$ ). There was no significant relationship between educational status and manner of work and the mean GHBI score ( $p>0.05$ ).

Table 5 shows the findings regarding the relationship between factory toilet hygiene and the mean GHBI score. A statistically significant relationship was found between the average GHBI score and the cleanliness of the factory toilet (52.80±6.17), the presence of toilet paper in the factory toilet (51.66±7.33), and the presence of soap in the factory toilet (55.75±13.76) ( $p<0.05$ ).

**Table 4. The Relationship Between Socio-Demographic Characteristics and Genital Hygiene Behavior Scale Mean Score**

Genital Hygiene Behaviors Scale					
Variables	Label	$\bar{x}\pm ss$	Z/ $\chi^2$	p-Values	Test
Having a child	Yes	51.61±10.45	2.120	.035*	b
	No	47.84±10.27			
Educational status	Primary school	46.45±11.13	2.094	.103	a
	Middle school	51.38±8.80			
	High School	51.87±10.62			
	University and above	48.22±11.55			
Shift hours	09.15 am-05.15 pm	51.32±10.65	3.710	.026*	a
	05.15 pm-01.15 am	46.56±7.19			
	01.15 am-09.15 am	40.00±6.68			
Way of working	Sitting work	51.74±10.85	.544	.581	a
	Standing work	49.88±11.65			
	Both sitting and standing work	50.35±10.50			
Income status	Less than monthly income	51.54±11.54	3.633	.028*	a
	Monthly income is equal to expenses	48.68±8.78			
	More than the monthly income	54.12±11.73			
Financial difficulty in purchasing menstrual products	Yes	49.66±10.41	-1.097	.014*	b
	No	51.39±10.56			

\* $p<0.05$ , Test a represents ANOVA, Test b represents the t-test

**Table 5. The Relationship Between Factory Toilet Hygiene Conditions and Genital Hygiene Behavior Scale Score Averages**

Genital Hygiene Behaviors Scale					
Variables	Label	$\bar{x}\pm ss$	Z/ $\chi^2$	p-Values	Test
Evaluation of the cleanliness of the factory toilet	Always	52.80±6.17	.785	.001*	a
	Sometimes	50.36±10.67			
	Never	45.14±1.60			
Availability of toilet paper in the factory toilet	Always	51.66±7.33	.209	.024*	a
	Sometimes	48.44±9.05			
	Never	47.77±10.70			
Availability of soap in the factory toilet	Always	55.75±13.76	1.080	.042*	a
	Sometimes	52.02±11.80			
	Never	50.03±9.93			

\*  $p<0.05$ , Test a represents ANOVA

Table 6 shows the findings regarding the relationship between the genital hygiene habits of the participants and their mean GHBI score. A statistically significant relationship was identified between the participants' average GHBI score and the frequency of changing menstrual products a day on working days in the factory (50.71±11.17) and the status of applying to a health institution in case of genital infections (53.56±10.09) ( $p<0.05$ ). No statistically significant relationship was observed between the average GHBI score and the frequency of changing menstrual products a day on non-working days, vaginal douching status, the status of

vaginal douching at every bath, the status of vaginal douching after intercourse, the status of vaginal douching after toilet, the status of vaginal douching after menstruation, and the status of vaginal douching after infection ( $p>0.05$ ).

**Table 6. The Relationship Between Genital Hygiene Habits and Genital Hygiene Behavior Scale Mean Score**

Genital Hygiene Behaviors Scale					
Variables	Label	$\bar{x} \pm ss$	Z/ $\chi^2$	p-Values	Test
Frequency of menstrual product replacement per day worked in the factory	3 and below	45.64 $\pm$ 10.41		<b>.047*</b>	b
	4 and above	50.71 $\pm$ 11.17			
Frequency of menstrual product change on a non-working day at the factory	3 and below	50.27 $\pm$ 10.52		.560	b
	4 and above	51.20 $\pm$ 10.52			
Vaginal douching	Yes	50.78 $\pm$ 10.67	-.379	.705	b
	No	47.84 $\pm$ 10.27			
Vaginal douching in every bathroom	Yes	51.32 $\pm$ 11.16	-.959	.339	b
	No	49.52 $\pm$ 9.45			
Vaginal douching after intercourse	Yes	50.07 $\pm$ 11.23	.370	.712	b
	No	50.92 $\pm$ 10.60			
Vaginal douching after toilet	Yes	50.67 $\pm$ 10.67	.088	.930	b
	No	50.84 $\pm$ 10.73			
Vaginal douching after menstruation	Yes	48.73 $\pm$ 10.41	.996	.321	b
	No	51.14 $\pm$ 10.72			
Vaginal douching after infection	Yes	55.75 $\pm$ 8.67	-1.688	.093	b
	No	50.36 $\pm$ 10.75			
In case of infection in the genital area	Yes	53.56 $\pm$ 10.09	-5.34	<b>.000*</b>	b
	No	45.46 $\pm$ 9.19			

\* $p<0.05$ , Test b represents the t-test

## DISCUSSION

This study aimed to explore the factors influencing genital hygiene behaviors among women employed in a factory setting by conducting a descriptive analysis.

The mean GHBI score of the women employed at the factory was calculated as 50.65 $\pm$ 0.78. A statistically significant difference was identified between the GHBI and the participants' parental status, shift hours, income status, the status of having financial difficulties in purchasing menstrual products, evaluation of the factory toilet cleanliness, availability of toilet paper in the factory toilet, availability of soap in the factory toilet, the frequency of changing menstrual products on a working day in the factory, and the status of seeking medical care at a health institution in the event of genital infections ( $p<0.05$ ).

The study revealed that the participants' genital hygiene behaviors were relatively low based on their GHBI scores, indicating room for improvement. Similarly, in the study of Özkan and Tosun (2022) the genital hygiene behaviors of worker women were found to be low. In the study conducted by Cangöl and Tokuç (2013) the levels of genital hygiene of working women were reported to be low. In the study of Moran et al. (2020) the level of hygiene behavior of women working in the factory was evaluated as low. In this study, the observation that the genital hygiene practices of women employed at the factory did not meet the desired level may be linked to their education and income levels. The majority of the women in the study had low educational attainment and income. It has been stated that the lack of knowledge of sexual health and genital hygiene increases as the education level decreases, and that low income levels may lead to limited access to hygiene materials. In addition, women's working conditions and the inadequacy of the opportunities offered in the working environment can lead women to adopt unhealthy hygiene behaviors. It is thought that these factors may have caused a low level of genital hygiene behaviors in women working in the factory.

A statistically significant difference was identified between the GHBI and the participants' parental status ( $p<0.05$ ). The results indicated that participants with children exhibited more desirable genital hygiene behaviors compared to those without children. In the study of Okonkwo and Umeanaeto (2011), it was stated that women have more knowledge of genital hygiene and tend to be more careful about genital infections, as the risk of genital infections tends to rise during pregnancy. It is believed that women with children develop improved genital hygiene behaviors in the study were at more desirable levels because women who went through the pregnancy period and had children had more knowledge and awareness about health and hygiene.

A statistically significant difference was observed between the shift hours of the participants and GHBI, and the genital hygiene behaviors of women working in the evening hours were found to be at low levels. In the study conducted by Nikpour et al. (2020) it was reported that shift work contributed to the development of genitourinary issues, including genital itching. In this context, it can be suggested that women working on the night shift face additional challenges in maintaining genital hygiene. This situation may be influenced by various factors related to shift work dynamics and workplace conditions. However, since the hygiene status of the institution's toilets during day and night shifts was not specifically evaluated, further research is needed to understand the exact causes of these challenges and to develop appropriate interventions.

A statistically significant difference was identified between the participants' income levels and their GHBI scores ( $p < 0.05$ ). It was observed that women whose expenses exceeded their monthly income exhibited lower levels of genital hygiene behaviors. Likewise, in the study of Gözüyeşil (2020) it was stated that the genital hygiene behaviors of the participants were not at the desired levels due to the decrease in their income level. In the study conducted by Özkan and Tosun (2022), it was reported that the income level of women workers was low and that this negatively affected their genital hygiene behaviors. In their study, Kurt Durmuş and Zengin (2020), reported that individuals with low-income levels had lower levels of genital hygiene behaviors compared to those with high-income levels. According to the findings of the Anand et al. (2015) study, declining income levels had a negative impact on the development of genital hygiene practices. In the study by Bhilwar et al. (2015), it was stated that genital hygiene behaviors progressed in a negative direction with the decrease in income. The limited access of individuals with low income to hygiene materials and health services may have affected the study results.

A statistically significant difference was determined between the participants' status of having financial difficulties in purchasing menstrual products and GHBI ( $p < 0.05$ ). Participants stated that they encounter financial difficulties in purchasing menstrual products. According to the research results of the Deep Poverty Network in Türkiye, although almost all of the participants were employed, the majority stated that they had financial difficulties in accessing sanitary pads from time to time and that they considered spending money on pads a luxury (Gocmen et al., 2020). Economically disadvantaged women have difficulties accessing menstrual pads due to financial difficulties. Therefore, women may not prefer to change menstrual pads frequently or may have to use fewer pads during the day. This may have negatively affected women's genital hygiene behaviors.

In the study, a significant association was identified between factory toilet cleanliness and GHBI ( $p < 0.05$ ). Most of the participants stated that the factory toilet was sometimes clean or was never clean. Unclean toilets negatively impact women's genital hygiene practices. In the study of Sommer et al. (2016), it was concluded that women may delay urinating and changing sanitary pads as they avoid going to the unclean toilet at work. Accordingly, it can be concluded that women may be more reluctant to perform daily genital hygiene routines since they avoid urinating in unhygienic toilets and changing sanitary pads. In this study, the fact that the toilets were not clean enough may have affected women's hygiene behaviors and may have caused undesired levels of genital hygiene behaviors in women.

The study revealed a statistically significant difference between the availability of soap in the factory toilet and GHBI ( $p < 0.05$ ). Most participants reported that soap was unavailable in the factory toilet, which negatively impacted women's genital hygiene practices. The unavailability of soap in the factory toilets may indicate that they cannot wash their hands with soap before and after toilets. In the study of Kurt Durmuş and Zengin (2020), the rate of handwashing with soap before changing pads was found to be low. Washing hands with soap is a hygienic practice and may be important in ensuring genital hygiene. Due to limited access to soap in factory toilets, women are not able to adequately clean their hands before and after using the toilet. It can be suggested that this may affect the low genital hygiene behaviors of women.

The study identified a statistically significant difference between the availability of toilet paper in the factory toilet and GHBI ( $p < 0.05$ ). Most of the participants stated that there was no toilet paper in the factory toilet. The unavailability of toilet paper in the factory toilets may indicate that women cannot perform the hygienic drying process after cleansing. In the study of Kula Ulu (2020) it was concluded that women who could not dry the genital area with toilet paper after urination developed genital infection symptoms. Due to the limited access to toilet paper, women are not able to dry their genital areas after toilet and cleansing. Cleaning and drying the genital area after using the toilet is hygienic behavior. In this context, it can be suggested that the limited access to toilet paper in the factory toilet influenced the participants' genital hygiene behaviors.

A statistically significant difference was observed between the frequency of changing menstrual products during working days and GHBI ( $p < 0.05$ ). Approximately half of the participants changed menstrual products 3 times or less a day. In the study, it was observed that the frequency of changing the pads on working days was less compared to the days they were at home. In the study of Sommer et al. (2016) it was determined that pad-changing behavior decreased in places without a safe and clean toilet. The unfavorable hygiene conditions that women encountered in the factory environment may have affected the frequency of changing menstrual products.

A statistically significant difference was identified between the practice of seeking medical care for genital infections and GHBI ( $p < 0.05$ ). It was observed that participants who sought medical care for infections exhibited positive genital hygiene practices. In the study conducted by Özkan and Tosun (2022), it was reported that women who regularly sought care at health institutions demonstrated positive genital hygiene practices. The fact that individuals apply to health institutions in case of infections shows that they are conscious about hygiene and prefer to receive treatment and care. This can be considered an important finding showing that individuals are more conscious about genital hygiene and exhibit positive behaviors.



## CONCLUSION

This study examined the genital hygiene behaviors of women working in factories and the individual and environmental factors associated with these behaviors. The findings indicate that hygiene behaviors among female workers are not at an optimal level.

- Nearly half of the participants experience financial difficulties in obtaining menstrual products, and there is no access to free or subsidized menstrual products in the factory. Participants with lower income levels exhibited significantly poorer hygiene behaviors.
- The cleanliness of factory toilets and the availability of basic hygiene materials, such as soap and toilet paper, were significantly associated with hygiene behaviors. Women working in environments where these supplies were consistently available demonstrated better hygiene practices.
- The frequency of menstrual product changes is lower on working days.
- A large proportion of women engage in vaginal douching.
- Participants who sought medical care for genital infections exhibited better hygiene behaviors, highlighting the importance of hygiene education and access to healthcare services.
- The average GHBI score of the participants was  $50.65 \pm 0.78$ , indicating that their hygiene behaviors are not at a desirable level.
- Women with children demonstrated better hygiene behaviors, suggesting that health knowledge acquired during pregnancy and childbirth may have a positive effect.
- Women working daytime shifts exhibited better hygiene behaviors compared to those working night shifts. Participants on night shifts faced poor sanitation conditions and limited access to hygiene materials.

Based on the findings of this study, the following targeted interventions are recommended:

- **Subsidized or Free Menstrual Products in Workplaces:** Employers, in collaboration with health authorities, should ensure the provision of free or affordable menstrual products in factory settings. This will alleviate financial barriers and promote healthier hygiene behaviors among low-income women.
- **Improvement of Workplace Sanitation Facilities:** Factories should implement policies to maintain clean, well-stocked toilets with consistent availability of soap and toilet paper. Regular sanitation audits and employee feedback mechanisms can help monitor and improve hygiene conditions.
- **Occupational Health Nurse Programs:** Occupational health nurses should develop targeted training programs focusing on menstrual hygiene management, genital health, and the importance of seeking medical care when needed. These programs should include practical demonstrations, informational sessions, and confidential health counseling tailored to the needs of factory workers.
- **Integration into Workplace Health Policies:** These interventions should be embedded into workplace health and safety policies, ensuring that reproductive health becomes a core component of occupational health frameworks.

This study contributes to the growing body of literature on women's reproductive health in industrial settings, emphasizing the critical role of workplace conditions in shaping hygiene behaviors. By addressing both individual and environmental factors, this research provides actionable insights that can guide public health policies and workplace reforms aimed at improving women's health outcomes. From a societal perspective, enhancing genital hygiene practices among female workers will lead to reduced healthcare costs, increased productivity, and better family health outcomes, as many women serve as primary caregivers. This underscores the importance of integrating reproductive health considerations into both workplace policies and public health initiatives.

In conclusion, this study highlights the urgent need for systemic interventions to improve genital hygiene behaviors among female factory workers. By addressing both financial barriers and workplace hygiene conditions, policymakers and employers can significantly enhance women's reproductive health, contributing to broader public health goals and gender equality in the workplace. These findings serve as a foundation for future research and policy development, emphasizing the importance of equitable access to hygiene resources and comprehensive health education for all working women.

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### Author contributions

Study design: SK, NKA

Data collection: SK

Literature search: SK

Drafting manuscript: SK, NKA

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