*Original Research / Orijinal Araştırma*

# *The Effect Of Genital Hygiene Training Provided To Women With A History Of Vulvovaginal Candidiasis On Genital Hygiene Behaviors And Self-Care Agency*

# Vulvovajinal Kandidiyazis Öyküsü Olan Kadınlara Verilen Genital Hijyen Eğitiminin Genital Hijyen Davranışları Ve Öz-Bakım Üzerindeki Etkisi

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## Abstract

**Objective**: The objective of the study was to determine the impact of genital hygiene training on genital hygiene practices and self-care agency levels in women with a history of vulvovaginal candidiasis who lived in rural locations.

Methods: The participants of this randomized controlled study were women who had a history of vulvovaginal candidiasis during the previous year and were registered with family health centers in two rural communities in eastern Türkiye. There were 114 women in the sample, including 57 in the intervention group and 57 in the control group. Training on genital hygiene behaviors was given to the women in the intervention group.

**Results**: Before the intervention, there was no significant difference in terms of self-care agency levels and genital hygiene behaviors between the women in the intervention group and the control group ($p>0.05$). After the first month following the training, the self-care agency levels of the participants in the intervention group increased significantly compared to the control group (94.71±8.08, 83.84±9.52, respectively;). Additionally, the appropriate genital hygiene behaviors mean score of the participants in the intervention group was significantly higher than those in the control group (141.36±15.88, 132.29±20.15, respectively;) ($p<0.05$).

**Conclusions**: The results of this study showed that genital hygiene behavior training can be a useful strategy for promoting genital hygiene behaviors and self-care agency among women of reproductive age with a history of vulvovaginal candidiasis who live in remote locations.

**Keywords**: genital hygiene, vulvovaginal candidiasis, genital infection, self-care, rural area, training

## Özet

**Amaç**: Bu çalışmanın amacı, vulvovajinal kandidiyazis öyküsü olan ve kırsal bölgelerde yaşayan kadınlarda genital hijyen eğitiminin genital hijyen uygulamaları ve öz bakım gücü üzerindeki etkisini tespit etmektir.

**Yöntem**: Bu randomize kontrollü araştırmanın katılımcıları, bir önceki yıl vulvovajinal kandidiyaz öyküsü olan ve Türkiye'nin doğusundaki iki kırsal bölgede aile sağlığı merkezlerine kayıtlı olan kadınlardır. Çalışma örnekleminde toplam 114 kadın vardır; 57'si müdahale grubuna ve kalan 57'si kontrol grubuna atanmıştır. Müdahale grubundaki kadınlara genital hijyen davranışları hakkında eğitim verilmiştir.

**Bulgular**: Müdahale öncesinde, müdahale grubundaki kadınlar ile kontrol grubundaki kadınlar arasında öz-bakım düzeyleri ve genital hijyen davranışları açısından anlamlı bir fark bulunmamıştır ($p>0.05$). Eğitimi takip eden ilk aydan sonra müdahale grubundaki katılımcıların öz bakım düzeylerinin kontrol grubuna göre önemli ölçüde arttığı (sırasıyla; 94.71±8.08, 83.84±9.52), ayrıca müdahale grubundaki katılımcıların uygun genital hijyen davranışları puanının kontrol grubuna göre önemli ölçüde arttığı (sırasıyla; 141.36±15.88, 132.29±20.15) ve gruplar arasında istatistiksel olarak anlamlı bir fark olduğu gösterilmiştir ($p<0.05$).

**Sonuç**: Çalışmanın bulguları, genital hijyen davranış eğitiminin, üreme çağında olup uzak bölgelerde yaşayan ve vulvovajinal kandidiyazis öyküsü olan kadınlar arasında genital hijyen davranışlarını ve öz bakımı teşvik etmek için yararlı bir strateji olabileceğini göstermiştir.

**Anahtar kelimeler**: genital hijyen, vulvovajinal kandidiyaz, genital enfeksiyon, kişisel bakım, kırsal alan, eğitim

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## Introduction

Vulvovaginal candidiasis is a fungal infection that threatens women's health and quality of life.[1] Although this infection can be treated and prevented through health education, it continues to be a health problem of women due to its prevalence and complications.[2] A study conducted by the Centers for Disease Control and Prevention (CDC), 75% of women of reproductive age had experienced vulvovaginal candidiasis at least once, and 40–45% had experienced it more than twice.[3] Furthermore, it is known well that underdeveloped nations have a greater prevalence of genital system infections than industrialized nations.[4]

For women to be protected against genital infections, particularly vulvovaginal candidiasis, which occupy a significant portion of their lives, they need to adopt and maintain genital hygiene habits. According to research in this area, women's genital hygiene habits were found to be insufficient.[5,6] It was determined that the increasing trend of vulvovaginal candidiasis across the world negatively affected women's health, family lives, and sex lives.[7,8] Vulvovaginal candidiasis leads to problems in women such as a problematic body image, an increase in vaginal symptoms and smell, fear of sexually transmitted diseases or cancer, avoiding sexual intercourse due to pain, physical exhaustion, weakness, psychological issues and fear of infertility, as well as economic, time-related, and workforce losses.[9,10]

All women are at risk of vaginal candidiasis and the negative symptoms caused by this infection. Therefore, ensuring genital hygiene is the most important step of protection from genital infections.[11] Genital hygiene practices involve the entirety of behaviors regarding the discharge of waste products related to urination, bowel movements, and menstruation.[12] In cases where hygiene practices for protecting genital health are not applied or applied improperly and inadequately, infections may develop in women, and women's health can be negatively affected.[13] In studies conducted in Türkiye, genital infections have been shown to be a prevalent health problem among women. Additionally, among the factors that affect morbidity are norms and habits, sociocultural factors, women's position in society, and their preferences that are considered risky. Hence, it has been emphasized that women should be well aware of these factors that greatly affect their health,[14] and these ill-advised hygiene behaviors that lead to an increase in the incidence of genital infections can be eliminated through education.[15,16]

The ability to initiate and carry out health-related actions necessary for the preservation and enhancement of one's health state is known as "self-care".[18] Self-care can increase the participation of individuals in their health and provides them with the opportunity to have equal access to health systems and services. Moreover, self-care can promote the use of preventive health services and the adoption of preventive behaviors, increased compliance with treatment, and a reduced need for health services.[19]

It is necessary for healthcare professionals to provide guidance in terms of ensuring hygiene behaviors and self-care agency and for women to gain awareness of their own health. For this to happen, they should be educated comprehensively about appropriate health behaviors regarding women's health.[20] Developing self-care agency to ensure and maintain genital hygiene is a major requirement for to women's health in the short term and reaching the targets in the desired general health indicators of countries in the long term.[21] Therefore, the goal of this study was to determine how genital hygiene training affected the genital hygiene behaviors and self-care agency of rural women with a history of vulvovaginal candidiasis.

The hypothesis of the study was as follows:

H1. Genital hygiene training provided to women with a history of vulvovaginal candidiasis is effective in increasing their levels of displaying appropriate genital hygiene behaviors and their self-care agency.

## Methods

### *Design*

This study was structured as a randomized controlled trial, wherein the participants were randomly divided into the control and intervention groups (i.e., training on genital hygiene).

The study was executed in the family health centers of two randomly chosen villages that were 20 to 30 kilometers far from the Eastern Turkish province of Van. These villages are in a rural area, and people make their living mostly through farming. Each village has one family health center, and other health institutions are in the provincial center. Family health centers are primary care institutions which provide reproductive health services for women (e.g., healthy women's follow-up, laboratory tests, family planning, education, counseling). While education is provided within the scope of preventive health services in family health centers, there is no education provided specifically on genital health regarding vulvovaginal candidiasis. Working hours are between 08.00 and 17.00 every weekday, and there are three family physicians and three family health professionals (midwife and/or nurse) in these centers.

### *Sample*

The population of the study included 1400 women registered at two family health centers. The inclusion criteria for the study were being 18 to 49 years old, having at least one positive culture test in the last six months according to their records at the family health centers, having been treated for vulvovaginal candidiasis and having completed

the treatment, not having any systemic disease, and not being pregnant or having the suspicion of pregnancy at the time the study was conducted.

The optimal sample size for the study was found using an online tool for a priori power analysis (https://www.stat.ubc.ca/~rollin/stats/size/n2.html). The sample size was determined to be 57 for each group (57 participants in the intervention group and 57 participants in the control group) based on a 5% margin of error with two-tailed significance, in a 95% confidence interval, with 80% power to represent the population, and the assumption that the mean score of genital hygiene behaviors, which was 84.51 (standard deviation: 5.69), would increase by three points [9]. Records from the family health centers where the study was carried out indicated that in the previous six months, 142 women had vulvovaginal candidiasis therapy, which they successfully completed. One hundred and forty-two women were randomly divided into the intervention and control groups. A list of women was compiled by the researchers for random assignment. According to the list, women with odd numbers were assigned to the intervention group, and women with even numbers were assigned to the control group. Figure 1 shows the sample selection procedure that was completed under CONSORT standards.

**Data Collection Instruments**

The Self-care Agency Scale (SCAS), the Genital Hygiene Behavior Inventory (GHBI), and a Personal Information Form were utilized in data collection. The data were collected from January through November 2023.

***Personal Information Form:*** The form that was created after a review of the literature included questions about the characteristics of the participants including their age, education levels, employment status, and other sociodemographic details.

***Genital Hygiene Behavior Inventory (GHBI):*** The inventory was created in Turkish to measure women's genital hygiene practices. The inventory is divided into three subscales: "abnormal finding awareness" (3 items), "menstrual hygiene" (8 items), and "general hygiene" (12 items). ). "Abnormal finding awareness" aims to determine awareness of abnormalities in the vagina and vaginal discharge (such as foul odor, color change, itching). Higher scores are interpreted to indicate higher levels of demonstrating adequate genital hygiene behaviors. Using Cronbach's alpha as a metric, the inventory's internal consistency coefficient was reported as 0.80.[2] The internal consistency coefficient of the inventory utilized in this study was 0.75.

***Self-Care Agency Scale (SCAS):*** The scale is employed to assess people's agency levels for self-care. Each item on the 35-item, 5-point Likert-type scale has scores ranging from 0 to 4. The scale's minimum and maximum total scores are 0 and 140. A high score on the scale indicates a high level of self-care agency. The scale has a Cronbach's alpha internal consistency coefficient of 0.89.[23] This value was determined to be 0.89 in this study.

***Procedures***

The researchers called women on the phone numbers they registered at the family health center and invited them to visit the centers. They conducted in-person interviews with the women in the counseling rooms of the family health centers using the data collection instruments to gather pretest data. Four weeks later, posttest data were collected by following the same procedures.

Following the pretest, "genital hygiene behaviors training" was provided to the women in the intervention group by one of the researchers (E.S.B.). Additionally, a genital hygiene brochure prepared by the researchers which included the same content as the training program was given to each participant. The training program was carried out as oral instruction as well as using the demonstration method which is called "tell-show-do". Individual questions of the women were answered at the end of the training. In the first meeting with the women, 2 sessions of 45 minutes with a 10-minute break were held in the counseling rooms of the relevant family health centers. Two weeks after these sessions, a 45-minute session was held to support the training content with the same method. There was no intervention given to the women in the control group.

The genital hygiene training program was developed by reviewing the literature, and expert opinion was taken for content checking before the implementation. In line with the opinions of three academics in the field of nursing, necessary corrections were made, and the training program was finalized. The training program included the introduction of reproductive organs, the properties of genital discharge, hand and general hygiene, genital infections, hygiene rules in sexual contact, genital hygiene during menstruation, problems related to genital organs, and coping with genital problems.

**Statistical Analysis**

The SPSS 25.0 for Windows program was used to analyze the data (SPSS, Chicago, Il, USA). The chi-squared test was utilized to compare the categorical variables. The Kolmogorov-Smirnov test was used to test the normality of the distributions of the data. Since the data showed a normal distribution, paired-samples t-tests were employed for the intragroup comparisons, and independent-samples t-tests were employed for the intergroup comparisons. The threshold for statistical significance was established at $p<0.05$.

**Ethical Considerations**

The Non-interventional Clinical Research Ethics Committee of Inonu University accepted and granted the project ethical permission (Decision number of accept: 2022/3782). Furthermore, a ClinicalTrials.gov number (NCT05998668) was obtained for the clinical trial. The volunteer information form was read to the women who were invited to participate in the study, and those who agreed to participate provided written consent. After the data collection procedure, the training brochures were distributed, and the women in the control group were provided with a brief counseling session on genital hygiene.

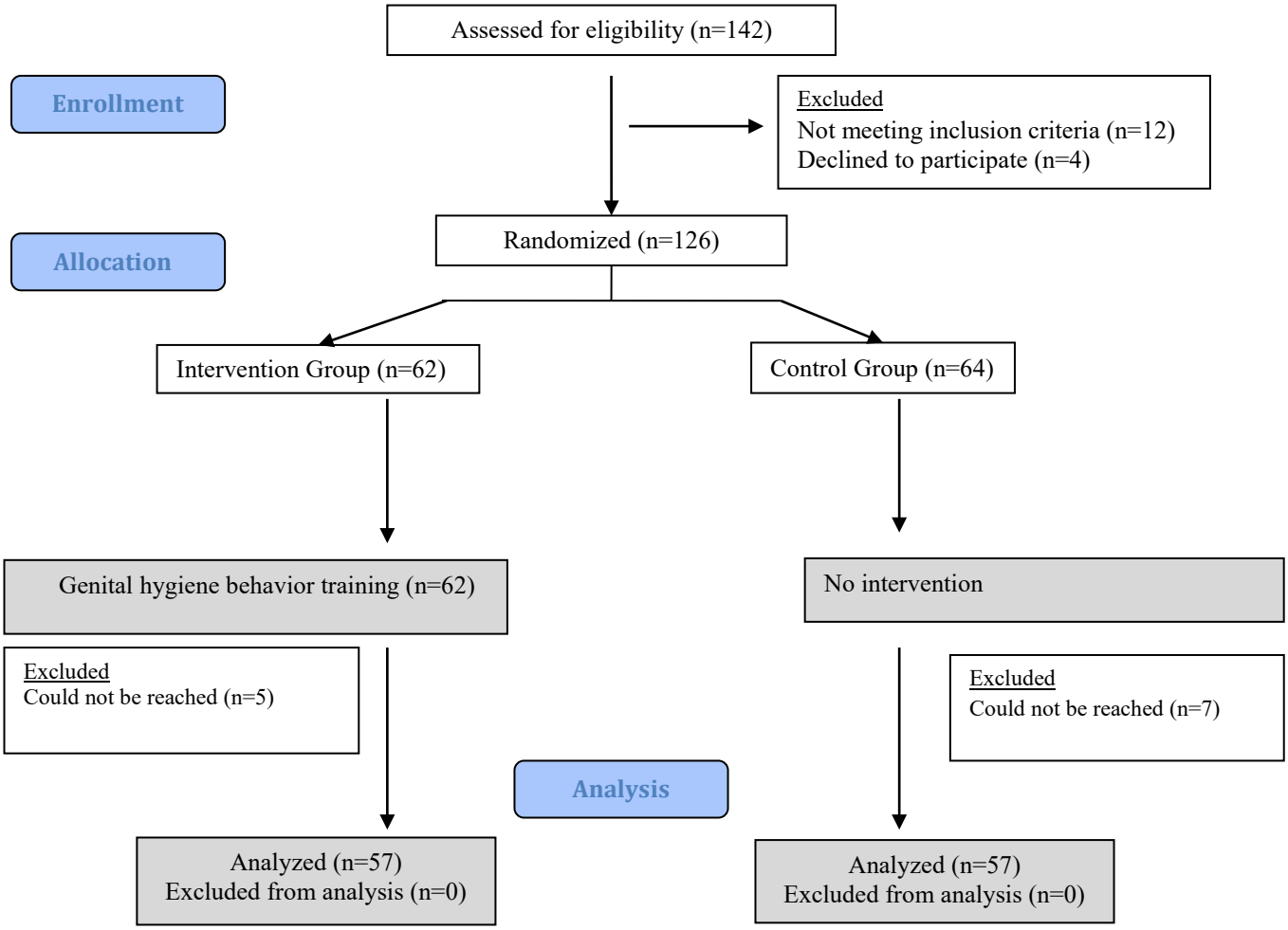


**Figure. 1**. Allocation of participants according to the CONSORT 2010 flow diagram.

**Results**

The sample of the study initially consisted of 142 women. After 16 women were removed from the sample before the start of the study (12 women did not meet the inclusion criteria, and 4 women did not consent to participate in the trial), 126 women were randomly assigned to the intervention and control groups. Then, 5 of the 62 women assigned to the intervention group and 7 of the 64 women assigned to the control group were removed from the sample because they could not be reached. The study was completed with 114 women, including 57 in the intervention group and 57 in the control group (Figure 1).

Age, education level, marital status, employment status, and income level data of the participants were similar between the two groups ($p>0.05$) (Table 1).

**Table 1.** Descriptive characteristics of the participants

| Characteristics | Intervention group (n=57) | | Control group (n=57) | | Total (n=114) | | Test and *p*-value |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | |
| **Age, y** | 30.57±9.25 | | 28.45±8.43 | | 29.51±8.87 | | t=1.280 p=0.203 |
| **Educational level** | | | | | | | |
| ≤ High school | 24 | 42.1 | 19 | 33.33 | 43 | 37.7 | $\chi2$=0.934 |
| ≥ University | 33 | 57.9 | 38 | 66.7 | 71 | 62.3 | *p*=0.334 |
| **Marital status** | | | | | | | |
| Married | 40 | 70.2 | 36 | 63.2 | 76 | 66.7 | $\chi^2$=0.632 |
| Single | 17 | 29.8 | 21 | 36.8 | 38 | 33.3 | *p*=0.427 |
| **Employed** | | | | | | | |
| Yes | 14 | 24.6 | 20 | 35.1 | 34 | 29.8 | $\chi^2$=1.509 |
| No | 43 | 75.4 | 37 | 64.9 | 80 | 70.2 | *p*=0.219 |
| **Income level** | | | | | | | |
| High | 14 | 24.6 | 12 | 21.1 | 16 | 22.8 | $\chi2$=4.654 |
| Medium | 39 | 68.4 | 33 | 57.8 | 72 | 63.2 | p=0.098 |
| Low | 4 | 7.0 | 12 | 21.1 | 16 | 14.0 | |

$\chi2$: Pearson's chi-squared test
t= Independent-samples t-test

The results of the comparisons of the mean pretest and posttest GHBI scores of the participants in the intervention and control groups are shown in Table 2. In the pretest, there was no significant difference between the groups in terms of their GHBI total and subscale scores. Following the intervention, a statistically significant difference was seen, favoring the intervention group, in the comparisons of the mean scores of the general hygiene, menstrual hygiene, and abnormal finding subscale scores and overall GHBI scores of the two groups (p<0.05) (Table 2).

**Table 2**. Pretest and posttest GHBI scores of the participants

| GHBI and subscales | Intervention group (n=57) | Control group (n=57) | Test[a] and p-value |
|---|---|---|---|
| | Mean±SD | Mean±SD | |
| **General hygiene** | | | |
| Pretest | 43.49±6.60 | 43.82±6.77 | t=0.266, p=0.791 |
| Posttest | 49.98±4.76 | 43.45±6.01 | t=6.423, p<0.001 |
| **Test[b] and p-value** | t= -7.245, p<0.001 | t=0.321, p=0.749 | |
| **Menstrual hygiene** | | | |
| Pretest | 31.28±4.45 | 31.36±5.28 | t=-0.096, p=0.924 |
| Posttest | 32.66±4.14 | 29.96±3.25 | t=3.392, p=0.001 |
| **Test[b] and p-value** | t=-2.026, p=0.048 | t=1.689, p= 0.097 | |
| **Abnormal finding awareness** | | | |
| Pretest | 11.59±2.65 | 10.73±2.96 | t=1.629, p=0.106 |
| Posttest | 12.07±2.02 | 10.42±2.25 | t=4.111, p<0.001 |
| **Test[b] and p-value** | t=-1.131, p=0.263 | t=0.722, p=0.473 | |
| **GHBI Total** | | | |
| Pretest | 86.36±9.95 | 85.92±11.85 | t=0.214, p=0.831 |
| Posttest | 94.71±8.08 | 83.84±9.52 | t=6.574, p<0.001 |
| **Test[b] and p-value** | t=-5.827, p<0.001 | t=1.139, p=0.260 | |

SD: Standard deviation
GHBI: Genital Hygiene Behavior Inventory
[a]Independent-samples *t*-test
[b] Paired-samples *t*-test

The results of the comparisons of the mean pretest and posttest SCAS scores of the participants in the experimental and control groups are shown in Table 3. It was found that prior to the intervention, the participants in the control and intervention groups had similar levels of self-care agency. On the other hand, subsequent to the intervention, the participants in the intervention group had significantly higher levels of self-care agency ($p<0.05$) (Table 3).

**Table 3.** Pretest and posttest SCAS scores of the participants

| **SCAS total** | **Intervention group (n=57)** | **Control group (n=57)** | **Test[a] and p-value** |
|---|---|---|---|
| | **Mean±SD** | **Mean±SD** | |
| Pretest | 133.29±16.27 | 134.84±16.58 | t=-0.501, p=0.617 |
| Posttest | 141.36±15.88 | 132.29±20.15 | t =2.668, p=0.009 |
| **Test[b] and p-value** | t= -3.182, p=0.002 | t=0.836, p=0.407 | |

SD: Standard deviation
SCAS: Self-Care Agency Scale
[a]Independent-samples *t*-test
[b]Paired-samples *t*-test

## Discussion

The results of this study demonstrated that giving women with a history of vulvovaginal candidiasis genital hygiene training can raise their levels of good hygiene practices and self-care agency. In this study, following the intervention, the participants in the intervention group had significantly higher levels of self-care agency and significantly improved genital hygiene behaviors than the participants in the control group. Therefore, given the limitations of this study, the hypothesis that "Genital hygiene training provided to women with a history of vulvovaginal candidiasis is effective in increasing their levels of displaying appropriate genital hygiene behaviors and their self-care agency" was supported.

Lack of genital hygiene can lead to the development and recurrence of infections even if the patient has received infection treatment. The importance of training and counseling in advisable hygiene habits is undeniable in terms of preventing infections and supporting treatment.[4] In previous studies, results regarding the positive effects of education provided on genital hygiene behaviors have been obtained.[24,25] According to Sinan et al. (2020), women who had previously practiced poor genital hygiene behaviors had considerably improved outcomes after receiving relevant education.[26] Similar findings were found in a study by Sumarah and Widyasih (2017), who examined how a genital hygiene training module affected the outcomes of teenage girls.[26] The girls showed improved attitudes and behaviors regarding the avoidance of pathological vaginal discharge following the training program.[27] These results demonstrate that increased information can result in favorable attitudes and improved genital hygiene behaviors, and supportive training can influence attitudes.

Additionally, the sample of this study included women living in rural areas. Previous studies reported that the prevalence of genital infections was higher in women living in rural areas.[28,29] Although the prevalence of genital infections is high in rural areas, most women do not seek health services or postpone their search for treatment. Therefore, it is important to provide general genital hygiene education to women, especially those in rural areas, and raise their awareness of genital infections.[26,28] Given this, it is anticipated that this study, which involved women with a history of vulvovaginal candidiasis living in rural regions, will add to the body of knowledge and aid in the development of initiatives aimed at enhancing the healthcare system.

This study also revealed that the self-care agency levels of the participants were positively impacted by the genital hygiene training program implemented in the study. Women with a history of vulvovaginal candidiasis received individualized training as part of the study. The finding obtained in the study could be related to the content of the training program specially prepared in line with the needs of the women, more active participation through individual sessions, and the training process which followed the principles of adult education. The findings of recent studies also supported the view that training programs focusing on hygiene affected self-care agency.[30] In the study they conducted with women diagnosed with vaginitis, Baraia et al. (2017) determined that personal care practices training regarding vaginal infections was effective in improving self-care agency. Similarly, in the study they conducted with women who had orthopedic ailments, Gül and Yağmur (2022) reported that general hygiene training promoted the self-care agency of the women. Self-care practices are important in that they help the person adopt preventive behaviors in relation to genital infections and increase compliance with treatment, as well as preventing recurrence.[19] In this context, it is thought that training programs on reproductive health and hygiene

should be provided to women to prevent genital infections through the development of self-care practices, and they should be included in the education and healthcare systems.

**Limitations**

There were some limitations to this study. The first limitation was that the results of the study may not be generalized to all women because its sample was limited to family health clinics in a single province of Türkiye. Second, bias may have resulted from the small sample size of the study and the voluntary participation of its participants. Third, the study measured only the results at the beginning and one month later, and the measurements were limited to the items of the Genital Hygiene Behavior Inventory and the Self-Care Agency Scale, which were applied as pretest and posttest measures. Another limitation of the study was that the long-term effects of the training program could not be evaluated. It would be invaluable to determine whether the women enjoyed any long-term benefits based on their improved knowledge of genital hygiene and self-care agency as a result of the training program.

**Conclusion and recommendations**

The results of this study suggested that individualized genital hygiene training for rural women with a history of vulvovaginal candidiasis may be a useful strategy for promoting genital hygiene behaviors and self-care agency. With the information they provide to women on genital hygiene behaviors, early diagnosis, and treatment, healthcare professionals play a significant role in women's healthy lifestyle behaviors. Therefore, women should be supported by healthcare professionals to gain awareness that they should consider genital infections they can experience in every stage of their lives as a significant health problem. It is vital that especially healthcare professionals working at primary healthcare centers use their counseling roles effectively by organizing training programs on this issue, and they should raise the awareness of women regarding genital hygiene by using visual and printed publications.

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