

ORIGINAL RESEARCH ARTICLE

Effects of planned education on genital hygiene behavior of adolescent females in a secondary school: A quasi-experimental study in northern Cyprus

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Abstract

This study was conducted as a pretest-posttest quasi-experimental design to determine the effect of planned education on the genital hygiene behaviors of secondary school female students in northern Cyprus. The research was conducted with 290 adolescents. Data were collected by using a personal information form and the Genital Hygiene Behavior Scale (GHBS). The paired sample t-test was used to analyze the data. It was determined that only 55.2 % of the adolescents received genital hygiene training, 11.7% had a genital infection and 48.6% used cosmetic products for the genital area. After education, there was a statistically significant increase in the GHBS scores and its dimensions, indicating the effectiveness and necessity of genital hygiene education. Genital hygiene education had a positive effect on the knowledge and practices of adolescent females. Therefore, planned education on genital hygiene, in which nurses play an important role, can be conducted regularly through school-based education and home visits. (*Afr J Reprod Health 2024; 28 [2]: 107-115*).

Keywords: Adolescents, genital hygiene behavior, women's health, education

Résumé

Cette étude a été menée sous la forme d'un plan quasi-expérimental prétest-posttest pour déterminer l'effet de l'éducation planifiée sur les comportements d'hygiène génitale des étudiantes du secondaire. La recherche a été menée auprès de 290 adolescents. Les données ont été collectées à l'aide d'un formulaire de renseignements personnels et de l'échelle de comportement en matière d'hygiène génitale (GHBS). Le test t pour échantillons appariés a été utilisé pour analyser les données. Il a été constaté que seulement 55,2 % des adolescents avaient reçu une formation en hygiène génitale, 11,7 % souffraient d'une infection génitale et 48,6 % utilisaient des produits cosmétiques pour la région génitale. Après l'éducation, il y a eu une augmentation statistiquement significative des scores GHBS et de ses dimensions, indiquant l'efficacité et la nécessité de l'éducation à l'hygiène génitale. L'éducation à l'hygiène génitale a eu un effet positif sur les connaissances et les pratiques des adolescentes. Par conséquent, une éducation planifiée sur l'hygiène génitale, dans laquelle les infirmières jouent un rôle important, peut être dispensée régulièrement et des visites à domicile. (*Afr J Reprod Health 2024; 28 [2]: 107-115*).

Mots-clés: Adolescents, comportement en matière d'hygiène génitale, santé des femmes, éducation

Introduction

Women can experience a variety of reproductive health problems at different ages. Urogenital infections are one of these problems. Although infections of the female reproductive system are not always life-threatening, they can cause a number of serious health problems^{1,2}. Although urogenital infections are preventable, their incidence and complications make them an important health

concern³. Every year, approximately one million women experience urinary tract infections that are not sexually transmitted⁴. Many studies have reported that adolescent females are more at risk for urogenital infections^{5,6}.

The World Health Organization (WHO) defines adolescence as the period of life between childhood and adulthood from 10 to 19 of age, during which significant physical, psychological and social changes occur^{7,8}. Issues that may arise from

the rapid increase in reproductive health problems during this period can occupy an important place in the lives of adolescents. Urogenital infections, which are more common in females than in males, can negatively affect the daily life of adolescent females, cause psychological problems and reduce their self-confidence^{5,9}.

The genital area is one of the most humid areas of the body because it is not in contact with the outside environment. The presence of bodily wastes, including menstrual blood, sweat, urine and semen, can easily cause microorganisms to colonize and multiply in this area. Failure to maintain hygiene or improper hygiene behaviors lay the groundwork for reproductive tract infections, pelvic inflammatory disease and other complications⁶. Factors, such as not washing hands, using inappropriate synthetic underwear, keeping the genital area moist, and not changing pads on time increase the risk of infection and complications¹⁰. The belief that reproductive health problems are less common during adolescence may lead to ignoring these problems, which, in turn, may have a negative impact on women's health¹¹. However, the incidence of genital infections may be higher at the beginning of adolescence due to the reasons mentioned above.

Personal hygiene and self-care practices are extremely important for maintaining and improving health at every stage of life. It is even more important to receive the necessary education during early adolescence to promote healthy behaviors¹². Genital hygiene is one of the most important health education topics for adolescent females. It is a broad term that includes several hygiene behaviors and care practices that protect the urogenital organs from infection, maintain physical integrity and improve functional health¹³⁻¹⁵.

Genital hygiene education plays an important role in reducing the risk of genitourinary infections in female students and protecting their health. Many studies have reported that inaccurate and inadequate knowledge of genital hygiene increases the risk of genitourinary infections¹⁵⁻¹⁷. Educating adolescent females about genital hygiene behaviors will have a positive impact on their sexual and reproductive

health. Nurses have an important responsibility in teaching genital hygiene practices. Through their roles as researchers, educators and counselors, they can help prevent urogenital infections and improve the reproductive health of female students. It is clear that adolescent females with improved reproductive health will become healthy women with healthy children, contributing to a healthy society in the future. The fact that the secondary school period is the most important period for individuals to acquire personal hygiene and reproductive health practices was the main motivation of this study. In this context, this study aimed to determine the effects of planned education on genital hygiene behaviors of secondary school girls.

Methods

Study design

This study was carried out using a pretest-posttest quasi-experimental design.

Population and sampling

The population of the study consisted of 323 female students studying in a secondary school in Famagusta district, Northern Cyprus, between November 2022 and February 2023. All public secondary schools in Famagusta district were listed and Canbulat Secondary School was selected using simple random sampling method. Volunteer female students aged 11-15 years, who were studying in the secondary school during the fall semester of the school year 2022-2023, who were menstruating and who did not have any physical or psychological problems that hindered communication were included in the study. The study was completed with 290 students. The rate of participation in the research is 89.7%.

Data collection tools

Personal information form and Genital Hygiene Behavior Scale (GHBS) were used for data collection.

Personal information form

The form was developed by the researchers based on the literature^{11,18-22} and consisted of questions, such as age, class, parental education and income level, education about genital hygiene and experience with genital infection.

Genital hygiene behavior scale (GHBS)

The scale was developed by Karahan and consisted of 23 items in three dimensions, namely, general hygiene, menstrual hygiene and awareness of abnormal findings. Items were scored on a five-point Likert scale and items 7,14,19,20 and 23 were reverse scored. Possible scores ranged from 23 to 115, with higher scores indicating proper genital hygiene behaviors. Cronbach's alpha of the GHBS and the general hygiene, menstrual hygiene and awareness of abnormal findings dimensions were 0.80, 0.70, 0.74 and 0.81, respectively¹⁹. The Cronbach's alpha values in our study were 0.78, 0.64, 0.58, and 0.71, respectively.

Procedure

The place and time of data collection were determined in consultation with the principal of the secondary school. A parental consent form was distributed to the students prior to data collection. After parental consent was obtained, volunteer participants were informed about the purpose of the study and student informed consent form was obtained. The personal information form and the GHBS were administered to all participants simultaneously as a pre-test during face-to-face interviews. To ensure confidentiality, participants were asked to use pseudonyms. One day after the pretest, nine groups of 30 people and one group of 20 people were divided into groups and a 40-minute genital hygiene lesson was given to all participants. Four groups were taught in one day, and the training lasted 2.5 days in total. The lecture consisted of a theoretical part and a demonstration of perineal care and pad changing on a perineal model. Topics of the lecture included anatomy of the female external genitalia, menstrual cycle, characteristics of

underwear, pad changing, frequency of bathing and perineal cleaning. The GHBS was completed by the participants as a posttest two months after the training. Participants were asked to use the pseudonyms they used in the pretest so that the pretest and posttest forms could be matched. It took

approximately 15 minutes for the students to complete each data collection instrument.

Data analysis

Statistical Package for Social Science (SPSS) version 25.0 was used for data analysis. Shapiro-Wilk and Levene tests were used to assess the normality of the data. The paired-samples t-test was used to compare the pretest and posttest scores of the GHBS. Descriptive statistics included number, frequency, mean and standard deviation. Statistical significance was set at $p < 0.05$.

Ethical considerations

Ethical approval was obtained from the Eastern Mediterranean University Ethics Committee (ETK00-2022-0292). Institutional permission was obtained from the Ministry of National Education of the Turkish Republic of Northern Cyprus (TRNC) and the administration of Canbulat Secondary School. Written informed consent was obtained from the students and their legal representatives. Prior to data collection, participants were informed about the purpose of the study, that data would be kept confidential, and that they could withdraw from the study at any time. The study was conducted in accordance with the Declaration of Helsinki.

Results

Table 1 shows the sociodemographic characteristics of the participants. Accordingly, the mean age was 12.28 ± 0.95 years, 35.2% were sixth grade students, 28.3% of the mothers and 33.8% of the fathers of the participants were high school graduates 74.1% and had an income equal to expenses.

Table 2 presents the characteristics regarding genital hygiene. Accordingly, 55.2% had received education about genital hygiene and 84.4%

Table 1: Sociodemographic characteristics (n: 290)

| Sociodemographic characteristics | | $\bar{X} \pm SD$ | |
|----------------------------------|-----------------------|------------------|----------|
| Age (years) | | 12.28±0.95 | |
| | | n | % |
| Grade | 6 th grade | 102 | 35.2 |
| | 7 th grade | 98 | 33.8 |
| | 8 th grade | 90 | 31 |
| Maternal education level | Primary school | 78 | 26.9 |
| | Secondary school | 69 | 23.8 |
| | High school | 82 | 28.3 |
| | University and above | 61 | 21 |
| Paternal education level | Primary school | 61 | 21 |
| | Secondary school | 77 | 26.6 |
| | High school | 98 | 33.8 |
| | University and above | 54 | 18.6 |
| Income | Less than expenses | 28 | 9.7 |
| | Equal to expenses | 215 | 74.1 |
| | More than expenses | 47 | 16.2 |

Table 2: Genital hygiene characteristics (n: 290)

| Genital hygiene characteristics | | n | % |
|---|-----------------------|----------|----------|
| Received genital hygiene education | Yes | 160 | 55.2 |
| | No | 130 | 44.8 |
| Source of genital hygiene education* | Family | 135 | 84.4 |
| | Friends and relatives | 6 | 3.7 |
| | Teacher | 5 | 3.1 |
| | Health personal | 14 | 8.8 |
| Previous genital infection | Yes | 34 | 11.7 |
| | No | 256 | 88.3 |
| Visited a health center for genital infection* | Yes | 17 | 50 |
| | No | 17 | 50 |
| Used cosmetic products for genital area | Yes | 141 | 48.6 |
| | No | 149 | 51.4 |

* Percentages were calculated based on the students who answered yes to the previous question.

Table 3: Comparison of GHBS pretest and posttest scores (n:290)

| | | $\bar{X} \pm SD$ | Min-Max | t | p* |
|--------------------------------------|-----------------|------------------|----------------|----------|------------------|
| GHBS | Pretest | 85.85±9.64 | 58-109 | -8.070 | <0.001 |
| | Posttest | 91.07±10.01 | 59-110 | | |
| General hygiene | Pretest | 44.64±5.38 | 30-58 | -6.137 | <0.001 |
| | Posttest | 46.99±5.85 | 31-59 | | |
| Menstrual hygiene | Pretest | 30.54±4.70 | 18-40 | -5.910 | <0.001 |
| | Posttest | 32.32±4.32 | 20-40 | | |
| Awareness of abnormal finding | Pretest | 10.67±2.73 | 3-15 | -5.627 | <0.001 |
| | Posttest | 11.72±2.52 | 3-15 | | |

Abbreviation: GHBS: Genital Hygiene Behavior Scale, Significant at the level of $p < 0.05$, *Paired samples t test

Table 4: Comparison of the responses before and after education (n:290)

| | Pre test | | Post test | |
|--|----------|------|-----------|------|
| | n | % | n | % |
| General hygiene | | | | |
| <i>I have a bath for at least once a week.</i> | 160 | 55.2 | 171 | 59 |
| <i>I change my underwear every day.</i> | 235 | 81 | 255 | 87.9 |
| <i>My underwear is generally white</i> | 70 | 24.1 | 116 | 40 |
| <i>My underwear is generally made of cotton.</i> | 91 | 31.4 | 146 | 50.3 |
| <i>I use my underwear alone.</i> | 267 | 92.1 | 271 | 93.4 |
| <i>I iron my underwear.</i> | 67 | 23.1 | 117 | 40.3 |
| <i>I change my underwear every 3-4 days.</i> | 157 | 54.1 | 182 | 62.8 |
| <i>I wash my hands before going to toilet.</i> | 147 | 50.7 | 172 | 59.3 |
| <i>I wipe from front to back following urination or defecation.</i> | 207 | 71.4 | 230 | 79.3 |
| <i>I use toilet paper following each urination or defecation to be dried</i> | 253 | 87.2 | 268 | 92.4 |
| <i>I wash my hands after urination and defecation.</i> | 281 | 96.9 | 285 | 98.3 |
| <i>I clean pubic hair frequently.</i> | 227 | 78.3 | 249 | 85.9 |
| Menstrual hygiene | | | | |
| <i>I only use disposable ready sanitary pads in my menstrual periods</i> | 223 | 76.9 | 247 | 85.2 |
| <i>I use cloth pads in my menstrual periods</i> | 177 | 61 | 200 | 69 |
| <i>I wash my hands before changing sanitary pads</i> | 174 | 60 | 232 | 80 |
| <i>I wash my hands after changing sanitary pads</i> | 252 | 86.9 | 273 | 94.1 |
| <i>Even if my pad is not full, I regularly change it every 3-4 hours</i> | 176 | 60.7 | 232 | 80 |
| <i>I sometimes take a warm bath in my menstrual periods</i> | 189 | 65.2 | 209 | 72.1 |
| <i>I do not change my underwear in my menstrual period unless it gets dirty</i> | 132 | 45.5 | 180 | 62.1 |
| <i>I change my pad in my menstrual period only when it is completely full</i> | 170 | 58.6 | 210 | 72.4 |
| Awareness on Abnormal findings | | | | |
| <i>I see a doctor in case of itching or burning sensation in my genital region</i> | 119 | 41 | 179 | 61.7 |
| <i>I see a doctor in case of a foul odor and different color vaginal discharge</i> | 143 | 49.3 | 189 | 65.2 |
| <i>I do not pay attention to the symptoms of a disease in my genital region</i> | 210 | 72.4 | 247 | 85.2 |

of these participants had received education from their family members. Only 11.7 had experienced genital infection and 50% of these students had visited a health center. Finally, 48.6% of the participants used cosmetic products for genital area. Table 3 shows the comparison of the pretest and posttest scores obtained from the GHBS and its dimensions. The difference between the pretest and posttest scores were statistically significantly different, indicating the effectiveness of genital hygiene education in improving genital hygiene behaviors ($p < 0.001$). Similarly, Table 4 showed that the correct responses of the participants on the general hygiene, menstrual hygiene and awareness on abnormal findings dimensions of the GHBS increased after the education.

Discussion

Genital hygiene education prevents the development of genitourinary infections in adolescent females and plays an important role in protecting and improving reproductive health²³. In this context, this study analyzed the effects of genital hygiene education on genital hygiene behaviors among adolescent females. The findings of the study were discussed in accordance with the genital hygiene characteristics of adolescents and the dimensions of genital hygiene behaviors.

In our study, 44.8 % of the participants did not receive any prior education about genital hygiene. These percentages were 35% in the studies of Yılmaz and Kahraman²⁴.

Other studies also reported that genital hygiene education and practices were inadequate^{21,25}. We also found that 84.4% of the participants received genital hygiene education from their family members. In contrast to our findings, Türkmen and Karagüzel reported that 22% of university students received this education from family members¹¹. Existing studies have emphasized the importance of the awareness of family members, especially mothers, in improving genital hygiene behaviors among adolescents²⁵. Supporting the literature, almost half of the participants in this study did not receive any education on genital hygiene, which was in parallel with the educational level of their mothers.

Only 50% of the adolescent females, who experienced genital infections sought healthcare, indicating a lack of genital hygiene education. Other studies conducted in countries with predominantly Muslim populations also found that genital hygiene education was inadequate and adolescent women did not seek healthcare when they experienced genital infections²⁶⁻²⁸. Since women's reproductive health is considered a privacy issue in Muslim societies, women living in these societies are mostly reluctant to seek healthcare unless it is necessary. Therefore, our findings can be explained in terms of the impact of religion and culture on women's health.

The mean pre-test GHBS score was 85.85 ± 9.64 , which increased to 91.07 ± 10.01 after on genital hygiene education, indicating the effectiveness of the education in secondary school adolescent females. Secondary school girls constituted the sample of a limited number of studies^{20,29}. Existing studies on adolescent females in secondary schools reported the positive effects of genital hygiene education provided by health professionals on their hygiene behaviors^{18,30}. Education has an important place among the factors that influence women's reproductive health. The improvement in genital hygiene behaviors after the education in this study can be explained in this direction. Considering that significant physical, psychological and social changes occur during adolescence, we can conclude that adolescents need genital hygiene education to be provided by health professionals.

The mean score of the general hygiene dimension of the GHBS increased from 46.99 ± 5.85 to 44.64 ± 5.38 after the educational intervention. A significant increase was observed in behaviors, such as using white underwear, changing underwear frequently, avoiding to keep their genital areas wet after using the toilet and washing their hands before and after using the toilet. Similarly, Koyun *et al.* have found that the percentage of adolescent females, who intended to use cotton underwear and change their underwear daily increased to 72.5% after the education. The study also reported positive changes in hand washing behavior before and after using the toilet³⁰. Kapoor and Kumar have reported that hand washing practices increased to 90% after receiving menstrual hygiene education²². Another study has found that adolescent females paid more attention to hygiene rules after receiving health education²⁹.

The menstrual period brings with it an environment that facilitates the growth of microorganisms, causing an increase in the incidence of genitourinary infections in adolescent females without adequate knowledge of genital and menstrual hygiene³¹. In our case, the scores obtained from the menstrual hygiene dimension of the GHBS increased from 30.54 ± 4.70 to 32.32 ± 4.32 . It was observed that there was an increase in the rate of using only ready sanitary pads, washing hands before and after changing pads, changing pads at frequent intervals, and taking warm showers during menstrual periods. This indicated the effectiveness of the education in reducing the risk of genitourinary infection. After the education, the participants started to change their pads more frequently during menstrual periods and washed their hands before and after changing their pads. Semi-experimental studies on Iranian adolescent females also reported the positive contribution of education on the knowledge and practice of menstrual hygiene^{26,32}.

Participants' scores on the awareness of abnormal findings dimension of the GHBS increased from 10.67 ± 2.73 to 11.72 ± 2.52 after the education. The participants' awareness of abnormal findings, such as itching or burning sensation in the genital area or a foul odor and different color of vaginal discharge, increased after the education. The study of Tolba *et al.*³³ on knowledge, practices and attitudes of

adolescent females towards external genital organs infection showed that the majority of the participants had poor knowledge, unsatisfactory practices and negative attitudes towards external genital organs infection. Küçükkeleşçe *et al.* reported a significant increase in the number of secondary school girls, who recognized the symptoms of genital infection and that consulted a doctor when they encountered the presence of infection symptoms¹⁸. Türkmen and Karagüzel found a significant association between genital hygiene education, training on vaginal discharge, regular gynecological examination and awareness of abnormal findings¹¹. These and our findings demonstrate the importance of education in increasing awareness of abnormal findings.

Conclusions

This study, which aimed to analyze the effects of a planned education on genital hygiene behaviors of adolescent females in a secondary school found that 55.2% received education on genital hygiene, 11.7% experienced genital infection and 48.6% used cosmetic products for the genital area. After receiving the education, there was a statistically significant increase in the scores obtained from the GHBS and its dimensions, indicating the effectiveness and necessity of genital hygiene education. In light of the results obtained in the research, both health professionals and relevant authorities have certain roles and responsibilities. In this context, it is necessary to ensure correct personal and genital health behavior changes in adolescents. Planned training should be carried out at periodic intervals and repeated when necessary, and nurses should take an active role in the training. In order to gain correct health habits and correct wrong practices, individual, genital and menstrual hygiene subjects should be added to secondary school curricula, educational materials including personal and genital hygiene practices should be prepared and presented to students and their parents, especially mothers.

Conflict of interest

The authors declare no conflicts of interest.

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Author contributions

Studydesign:AA,GY

Datacollection:AA,MA,GY

Dataanalysis:AAC

Manuscript writing: AA, GY, MA, AAC

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Data availability statement

The data that supports the findings of this study are available in the supplementary material of this article.

Limitation

This study had two limitations. First, it was a randomized uncontrolled study. However, given the importance of genital hygiene education, we felt it would be unethical not to educate some of the adolescent female. Secondly, the study was conducted in a single school so that the results may not be generalizable.

Other statements

This article was presented oral at the 2nd International 3rd National Women's Health Nursing Congress held in Ankara between 21-23 December 2023.

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