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Impact of Toilet Hygiene Training Program on School-Age Children*

Okul Yaş Dönemi Çocuklarda Tuvalet Hijyen Eğitimi Programının Etkinliği

Çağrı ÇÖVENER-ÖZÇELİK[a1], Eda AKTAŞ [b], Halime SEFER[c], Ayşe Ferda OCAKÇI[d]

[a] *PhD, Assist. Prof., Marmara University Faculty of Health Sciences Division of Nursing Department of Pediatric Nursing, İSTANBUL*
[b] *Msn., Res. Assist., Marmara University Faculty of Health Sciences Division of Nursing Department of Pediatric Nursing, İSTANBUL*
[c] *Msn., Üsküdar Pazarbaşı Family Health Center, İSTANBUL*
[d] *PhD, Prof. Dr., Koç University Faculty of Nursing, İSTANBUL*

Original Research

Abstract

Objective: The aim of the study was to evaluate the impact of the toilet hygiene training given by school/pediatric nurse to children between the ages of 7-12 in an elementary school.
Methods: This study had a pretest-posttest design with experiment and control groups. The participants were 150 (78 for experiment group and 72 for control group) students who were aged 7-12.
Results: Only 46.7% of the students practiced correct toilet hygiene technique. Total Toilet Hygiene Evaluation Form point was significantly different between before and after intervention in experiment group (p<0,001).
Conclusions: Outcomes indicate that the impact of the toilet hygiene training was effective in improving accurate toilet hygiene habits among elementary school students. School/pediatric nurses play a key role in promoting correct hygiene habits and are responsible for providing counseling on health promoting behaviors for students.

Keywords: School health, Toilet hygiene, Health education

Öz

Amaç: Bu araştırmanın amacı bir ilkokulda 7-12 yaş arası çocuklara, okul/çocuk sağlığı hemşiresi tarafından verilen tuvalet hijyen eğitiminin etkinliğini değerlendirmektir.

[1]*E-mail addres: ccovener@hotmail.com*
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Yöntem: Deney ve kontrol gruplu ön test-son test düzeninde gerçekleştirilmiştir. Araştırmanın örneklemini 7-12 yaş arasındaki 150 (78 deney ve 72 kontrol grubu) öğrenci oluşturmuştur.
Bulgular: Öğrencilerin sadece %46,7'sinin doğru tuvalet hijyeni yöntemini bildikleri saptanmıştır. Deney ve kontrol grubu öğrencilerin girişim öncesi ve sonrası Tuvalet Hijyeni Değerlendirme Formu'ndan aldıkları puanlar arasında istatistiksel olarak anlamlı fark bulunmuştur ($p<0,001$).
Sonuçlar: Araştırmadan elde edilen sonuçlar tuvalet hijyen eğitiminin ilkokul öğrencilerinde doğru tuvalet hijyeni alışkanlıklarını geliştirmede etkili olduğunu göstermektedir. Okul/çocuk sağlığı hemşireleri doğru hijyen alışkanlıklarını geliştirmede anahtar rol oynamakla birlikte öğrenciler için sağlığı geliştirici davranışlarda danışmanlık yapma sorumluluğuna da sahiptirler.

Anahtar Sözcükler: Okul sağlığı,Tuvalet hijyeni, Sağlık eğitimi

Introduction

Children's behavioral styles are formed during school years so it is very important to provide health education in schools. Children conduct their own hygiene practices which taught by parents and teachers in school. To be obtained the behaviors such as toilet and hand hygiene in a right way has a direct impact on child's future health and is one of the nurses' roles.

Providing high quality and widespread health services to a country's children is the most important factor positively affecting public health in the country. Children's health services should take into account the family, school, and society, all of which have various roles in the development of a child. The behavioral patterns of children, who are in fact the adult population of the future, are shaped during school years. Thus, it is very important to provide health education in schools.[1,2]

As a common habitat for the population, schools shine as environments appropriate for interventions aiming to promote health improving behavior. The child first learns important life experiences such as health behavior within the family, and then these experiences are reinforced at school. School children spend most of their time at school. They perform the hygiene applications taught them by their teachers and parents themselves. Teaching health behavior such as toilet and hand hygiene correctly should affect the health of the individual in future years directly. Since the ability of a schoolchild to learn and gain skills and knowledge is high, the acquisition of correct behavior is easier at that age. [3-5]

Hygiene is the whole sum of self-care applications performed in order to avoid environments harmful to health and to maintain health.[3] Although every effort to improve hygiene behavior is valuable, one of the most important hygiene applications that can be developed in a school environment is toilet hygiene. The most important factor in the improvement of children's health and their protection from contagious diseases and infections is good toilet hygiene. Factors such as insufficient genital hygiene and hand washing after defecation, and the habit of not using toilet paper in children have an important role in exposure to contagious diseases (hepatitis, typhoid, dysentery, etc.). Teaching children the correct rules of hygiene are an effective step in protecting them from diseases. [6-8]

Another factor as important as teaching children the correct toilet hygiene behavior is teaching them the correct hand hygiene behavior. Although washing hands is a simple and short procedure and people usually know the importance of washing hands, studies indicate that hand washing behavior is on an insufficient level in both children and adults.[9] It has been reported that correct hand

washing methods and hygiene habits, if taught to people, would significantly improve sustainable public health. Teaching children the correct hand and genital hygiene habits and responsibility on the issue falls to the nurses, who are the group with the most communication with healthy/ill individuals among the health team members.[10]

School Health in Turkey

According to the data of Turkish Statistics Institute[11], approximately, there were 16 million students in elementary, secondary and high schools in Turkey during the 2015-2016 education periods and, more than 800.000 teachers and school employees should be evaluated within the scope of school health. School/pediatric nurses' duties, authorizations and responsibilities in health promotion of children were identified in new Nursing Regulations. School/pediatric nurses work as a team with the school employees and children's families, as well as their contributions to school-aged children, pediatricians can collaborate with, support, and promote school nurses in their own communities [12] Unfortunately, the number of school/pediatric nurses in Turkey is not at the desirable level in schools. School health services are conduct within the scope of Family Medicine Practice.[13] However, school/pediatric nurses have very important roles in scans, detecting diseases, and determining impediments related to public health.[6] Teaching children behavior that improves and protects their health will increase their knowledge on the subject of health and thus create healthier generations and correct toilet hygiene behaviors are one of the important subjects in order to provide healthier generations.[2]

Toilet Hygiene Practice in Turkey

Traditionally, in Turkish culture, it is common practice in toilet hygiene to clean the genital area with naked hands and water without using dry toilet paper first. This means that individual takes water in her/his hand and wash the genital area until it cleans and then dried it with cotton tissue or toilet paper. After this process the individual wash his/her hand with soap and water. This practice is traditional and common in Turkish culture but of course some of the Turkish people practice the toilet hygiene by wiping the genital area with toilet paper first and then by washing or wiping again with toilet paper soaked with water and finally by drying the area with toilet paper but this practice is not common.[14] On the other hand, in traditional practice individuals contaminate their hands with urine and feces and, if they may not be able to wash their hands in an effective way, this would lead to an increased risk of developing diseases transmitted via the fecal-oral route as hepatitis, etc. However, the children learn this traditional practice in their family.

Objective

The aim of this study shaped from traditional toilet practice of Turkish culture and thought that this behavior may be corrected by school/pediatric nurse in school environment. The purpose of the study was to evaluate the impact of the toilet hygiene training given by school/pediatric nurse to children between the ages of 7 and 12 in an elementary school.

The hypothesis of the study was "The levels of knowledge of children between the ages of 7 and 12 who receive toilet hygiene training by school/pediatric nurse regarding correct toilet hygiene increases when compared to those who do not take the training".

Methods

Design

This study had a pretest-posttest design with experimental and control groups and conducted in between May-November 2012.

Participants

The universe of the study -except first grade students- consisted of 570 students in an elementary school in Istanbul aged between 7-12 years. First grade students did not include the study because they did not complete their writing and reading skills during the study. 2nd, 3rd, 4th and 5th classes respectively consisted of 150, 140, 145 and 135 students. Calculated sample size was 230 students. In order to select a sample, stratified random sampling method used. Stratified loads and sample size of each class were presented in Table 1.

Table 1. Results of Stratified Random Sampling Method

Classes	Number of Students	Stratified Load	Number of Students in Sample
2nd	150	150/570=0.26	0.26x230=60
3rd	140	140/570=0.24	0.25x230=55
4th	145	145/570=0.26	0.25x230=60
5th	135	135/570=0.24	0.24x230=55
Total	**570**	**1**	**230 students**

After determination of sample size, experiment and control groups were chosen randomly in each class by lot. In statistics, a simple random sample is a subset of individuals (a sample) chosen from a larger set (a population). Each individual is chosen randomly and entirely by chance, such that each individual has the same probability of being chosen at any stage during the sampling process.[15] At the end of the study 80 students were excluded from the study because of missing data and finally the study was completed with 150 students (78 for experiment group and 72 for control group). The experiment and control groups were in the same school population.

The participants were selected using the following criteria: Participants were "without any health problems related to the bladder and the urethra". Medical records of participants inspected from school records. Participants have not educated before about toilet hygiene.

Data Collection

Data was collected with the "Student Information Form" and the Toilet Hygiene Evaluation Form (THEF) which were prepared by the researchers. For the experiment group, these forms were administered at baseline, immediately after the intervention, and 3 months after the intervention (THEF). For the control group, these forms were administered at baseline and 3 months later (only THEF). Data collected by the researchers.

Student Information Form: This form investigates the sociodemographic characteristics of the participants and includes 12 open-ended and 2 close-ended questions (14 questions in total) that evaluate toilet hygiene and training as well as hand hygiene. The form was prepared by the researchers on the basis of the available literature in order to identify sociodemographic characteristics

and how toilet hygiene is practiced (Appendix 1).

Toilet Hygiene Evaluation Form: This form consist of 10 multiple choice questions prepared by the researchers on the basis of training materials (Appendix 2). This form sent six expert in the area of pediatric nursing for their opinions and required corrections were revised.

Intervention

After separating the experiment and control groups into 4 groups each, the student information form and the THEF were administered to the experiment and control groups before the education. The experiment group was trained in separate classes for a single period (40 minutes) by using the "Toilet Hygiene Training Presentation" prepared by the researchers. This form sent six expert in the area of pediatric nursing for their opinions and any corrections were required. The training was provided in an interactive way. "Toilet hygiene education presentation" contained these topics: (1) Definition of Hygiene, (2) Hand Washing, (3) Importance of Toilet Hygiene, (4) Perinea Hygiene (5) Proper Toilet Using. The knowledge of the experiment group on the subject was measured immediately after the intervention. The control group did not receive training.

The effectiveness of the training was evaluated three months after the intervention. The same interactive training was given to the control group which was not trained previously following the second evaluation. Brochures prepared in regard to the subject were given to participants and the school administration once the survey is completed and banners were hanged in school restrooms (Figure 1).

Data Analysis

NCSS (Number Cruncher Statistical System) 2007 Statistical Software (Utah, USA) was used for statistical analyses. Results obtained by applying definitive statistical methods (mean, standard deviation, frequency), chi-square test, Friedman test, Bonferroni corrected Wilcoxon signed-rank test and Repeated Measures ANOVA test. The chi-square test was used for homogeneity testing between the experiment and control groups. The Kolmogorov-Smirnov test was used to test variable distributions for normality. Friedman test was used for comparing baseline and post-intervention scores and Wilcoxon signed-rank test was used for Post Hoc evaluation. The repeated Measures ANOVA test was used to examine the interaction effect of group over time for the dependent variables, which were measured at baseline, immediately after the intervention and one month after the intervention. The results were evaluated at 95% confidence interval, and statistical significance was accepted as $p<.05$.

Ethical Consideration

The study was conducted after receiving approval from the institutional review board (Marmara University-IRB 22.05.2012-5) and the provincial education department of Turkey. Written consents obtained from parents of children. The control group was afforded the same intervention program as the experiment group after completion of the study.

Limitations

Support received from the school management provided complete implementation of all steps included in the education program. Due to limitations in time and finances, the study was conducted in a single elementary school. Since the study was conducted with a small group, the generalizability of findings is limited. First grade students did not include the study because they did not complete their writing and reading skills during the study. At the end of the study 80 students were excluded from the study because of missing data.

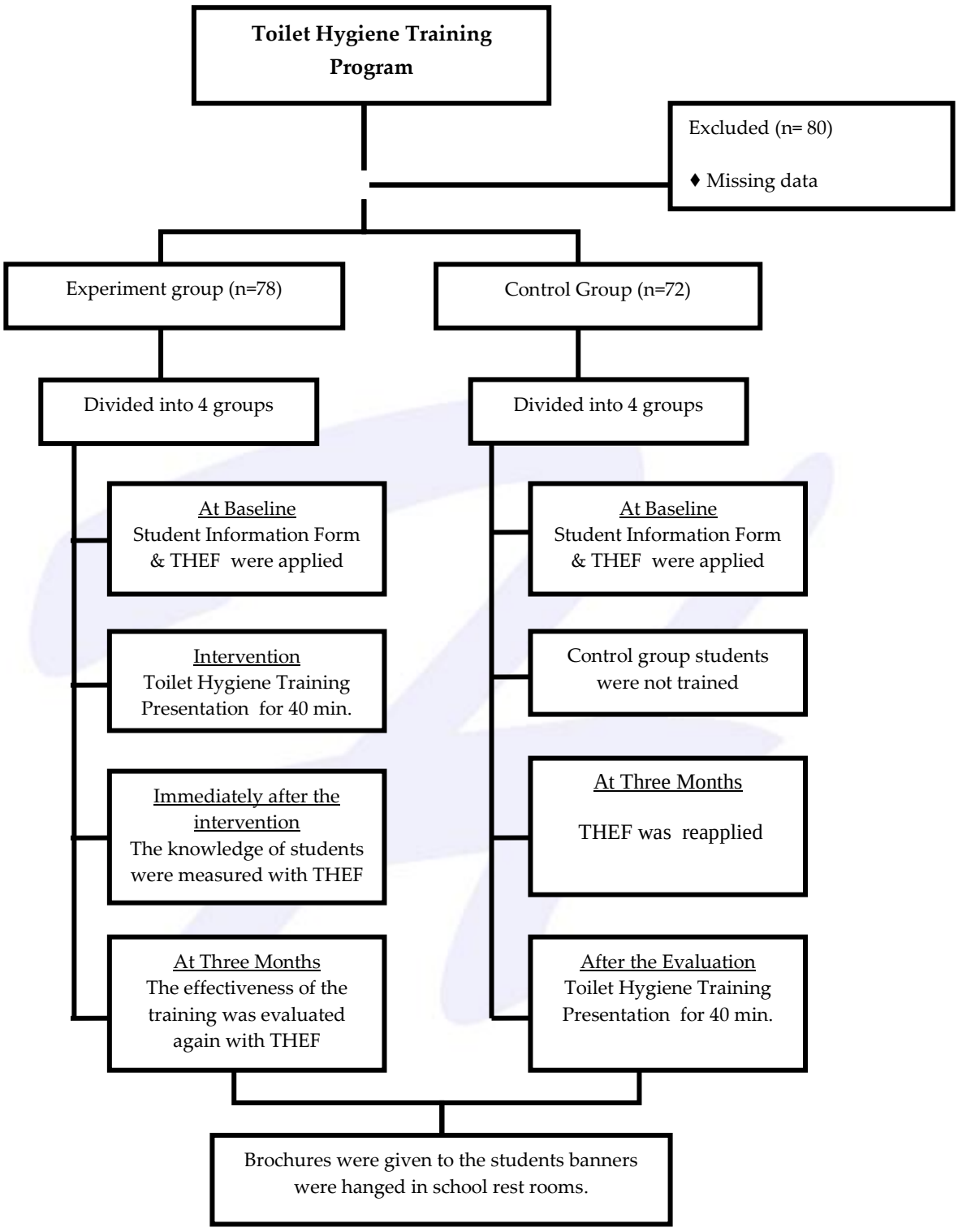

Figure 1. Toilet Hygiene Training Program for Elemantary School Students

Results

Characteristics of the participants of experiment and control groups are shown in Table 2. There were no statistically significant differences between the intervention and control groups in terms of demographic variables (Table 2). Mean values for general characteristics of the experiment group were as follows: mean age 9.88±1.21 (7-12), 46.2% of the mothers and 26.9% of the fathers were elementary school graduates. Mean values for experiment variables of the control group were as follows: mean age 9.87±1.41 (7-12), 30.6% of the mothers and 25.0% of the fathers were elementary school graduates. Homogeneity between the experiment and control groups was identified (p > 0,05).

Table 2. Characteristics of Participants and Homogeneity Between Groups (n=150)

Variable	Experiment Group		Control Group		χ^2 ; *p
	n	%	n	%	
Sex					
Female	42	53.8	38	52.8	χ2 =0.017 p=.896
Male	36	46.2	34	47.2	
Age					
7-9	32	41.0	30	41.7	χ2 =0.006 p=.937
10-12	46	59.0	42	58.3	
Grade					
2	20	25.6	24	33.3	
3	18	23.1	9	12.5	χ2=4.364 p=.225
4	16	20.5	11	15.3	
5	24	30.8	28	38.9	
Education of mothers					
Literate	7	9.0	6	8.3	
Primary graduates	36	46.2	22	30.6	
Secondary graduates	14	17.9	15	20.8	χ2 =4.763 p=.446
High gradutes	11	14.1	15	20.8	
Gradute	8	10.3	10	13.9	
Illiterate	2	2.6	4	5.6	
Education of fathers					
Literate	8	10.3	6	8.3	
Primary graduates	21	26.9	18	25.0	
Secondary graduates	14	17.9	11	15.3	χ2 =1.347 p=.930
High gradutes	16	20.5	19	26.6	
Gradute	18	23.1	16	22.2	
Illiterate	1	1.3	2	2.8	

*χ^2: qui-square test * p< .05*

Table 3 and Table 4 show comparisons of toilet hygiene training and toilet hygiene knowledge of participants, respectively. It was found that there was no significant difference between experiment and control group participants' toilet hygiene training and knowledge (p>0,05). 96.0% of the participants (n=144) stated that they washed their hands after using the toilet, whereas only 29.3% of the participants (n=44) stated that they washed their hands before using the toilet.

An evaluation form was administered to the experiment group before and immediately after the intervention. The mean score was 65.64±21.23 points before the intervention and 85.76±13.13 points

Table 3. Comparison of Participants about Toilet Hygiene and Habits

Variable				Experiment Group		Control Group		χ^2; *p
				n	%	n	%	
" Going to the Toilet	Can you go to the toilete when you need?	**YES**		74	94.9	66	93.3	χ2 =0.618 p=.432
		NO	Toilets are dirty	4	5.1	4	5.6	
			Teacher doesn't let me	0	0	2	2.8	
Toilet Hygiene Habits	How do you usually perform toilete hygiene?	Wet wipe/ toilete paper		22	62.9	13	37.1	χ2 =4.595 p=.101
		Only water/ water and soap		29	42.6	39	57.4	
		Dry toilette paper		27	57.4	20	42.6	
	When do you clean your perineal area?	After every urination		26	48.1	28	51.9	
		After every defecation		18	48.6	19	51.4	χ2 =1.236 p=.539
		Both of urination and defecation		34	57.6	25	42.4	
	How often do you change your underwear?	Everyday		28	47.5	31	52.5	χ2 =1.382 p=.501
		Every 2 or 3 days		41	53.2	36	46.8	
		Once in a week		9	64.3	5	35.7	

*χ^2: qui square test * p< .05*

after the intervention. The difference between scores baseline and immediately after the intervention were found to be significant (z = -6.75, p<0,001). The mean score was found to be 87.1±14.31 three months after the intervention and the difference was deemed to be significant as well (z = -7.07, p<0,001) (Table 5). Mean scores of participants immediately and three months after the intervention were found to be not significant due to the recalling effect, but mean points were higher than baseline (z = -0.976, p>0,05).

Mean evaluation score of the control group was 60±27.25 before the intervention, whereas the same score was found to be 62.80±23.64 three months after the intervention. The difference between two mean scores was not found to be significantly different (z = -0.596, p>0,05) (Table 5).

Table 4. Comparison of Participants Knowledge about Toilet Hygiene

Variable		Experiment Group		Control Group		χ^2; *p
		n	%	n	%	
Have you ever been educated before about toilete hygiene?	**No**	9	47.4	10	52.6	χ2=0.015 p=.902
	†Yes (from whom?)	69	52.7	62	47.3	
	Health care team (nurse. etc)	13	17.3	15	20.8	
	Parents	53	70.7	49	68.1	
	Books	8	10.7	8	11.1	
	Newspaper	4	5.3	5	6.9	
	Teacher	18	24.0	23	31.9	
	TV	8	10.7	9	12.5	
	Internet	9	12	9	12.5	
	Friends	6	8.0	2	2.8	
	Other	1	1.3	4	5.6	

†Chosen more than one option
χ^2: qui square test * p< .05

The interactions between experiment and control groups were investigated. The difference between two groups at baseline and three months after the intervention was found to be significant (F = 41.46; p < 0,001). Test scores of the experiment group were higher. There had been no interactions between experiment and control group students.

Discussion

The present study is an intervention study led by nurses and teaches toilet hygiene. The hypothesis was confirmed and the efficacy of the toilet hygiene education program was demonstrated.

The participants of the study were aged between 7-12 years (Table 2). Elementary school children exhibit high levels of willingness to learn and information and skill acquisition abilities and they are in a period enabling learning.[2] Therefore, it was assumed that it would be easier to promote proper behaviors in elementary school children.

In the study, it was determined that 31.3% of the participants cleaned their genital area with dry toilet paper, 45.3% with only water/water and soap, and 23.3% with wet wipe/toilet paper (Table 3). In other studies, the rate of using toilet paper was found to be 82.7-91%.[16,17] Most wet wipes can prepare the way for infection development by irritating the skin when the ingredients of wet wipes are not taken into account. In Turkish culture, it is common practice in toilet hygiene to clean the genital area with water. However, if the children of this age group practice genital hygiene directly using water

and hands and without using dry toilet paper first, they may not be able to wash their hands in an effective way. This would lead to an increased risk of developing diseases transmitted via the fecal-oral route. Therefore, it is recommended to practice hygiene by using toilet paper first and then by washing with water and finally by drying the area with toilet paper. According to our findings, toilet hygiene was not practiced in an appropriate way. This finding can be explained by the lack of sufficient toilet materials (toilet paper, soap, etc.) in schools and by children's lack of knowledge on genital hygiene.

Table 5. Comparison of THEF Total Points in Experimental and Control Groups

Group	Variable	Min-Max	Mean ±SD	Test	*p	Post Hoc	Z; p
Experiment Group (n=78)	Baseline (a)	0-100	65.64±21.23	χ^2= 92.175	.000	a-b	-6.75; .000
	Immediately after intervention (b)	30-100	85.76 ±13.13			a-c	-7.07; .000
	After intervention (at 3rd month) (c)	30-100	87.17 ± 14.31				
Control Group (n=72)	Baseline	20-100	60 ± 27.25	**Z**= -0.596	.551		
	After intervention (at 3rd month)	50-100	62.8 ± 23.64				

*χ^2 : Friedman Test, **Z**:Wilcoxon signed-rank test , *p< 0,017 (Bonferroni corrected), p<0,05*

When we examined the frequency of changing underwear, we observed that 51.3% of the participants changed their underwear every 2-3 days, 39.3% changed every day, and 5.3% changed once a week (Table 3). As reported in different studies performed with children in Turkey, the frequency of changing the underwear differs.[16-18] However, underwear should be changed on a daily basis. This study findings indicate that less than half of all participants changed their underwear every day. The reduced frequency of changing underwear among our participants can prepare the way for various infections (fungus, urinary tract infections, etc.). Therefore, toilet hygiene education is of paramount importance.

It was determined that 96.0% of the participants (n=144) stated that they washed their hands after using the toilet, whereas only 29.3% of the participants (n=44) stated that they washed their hands before using the toilet. Students wash their hands mostly after using the toilet and many studies support this result.[9, 16, 17, 19, 20] Hand washing is a very effective and simple way of protecting one from diseases.[5] Hand washing habits are shaped during the elementary school period. Therefore, many hand washing programs were provided for elementary school children and were proved to be effective.[21-23] Low rates of hand washing before using the toilet indicate that children do not have sufficient knowledge on hand hygiene and washing times or that they perceive their hands as clean before using the toilet. These indications establish the necessity of providing such education programs in elementary schools.

In the present study, it was determined that 92.7% of the participants washed their hands with water and soap. In many studies, the rate of washing hands with water and soap was found to be

similar to our finding.[16,18,24,25] Hands easily become dirty during the day. As mentioned in many studies, intervention programs provided for increasing hand washing behavior in elementary school children are very effective. [21-23,26,27] In our study, correct hand washing techniques were provided in detail during the toilet hygiene education program.

It was determined that 87.3% of the participants received education on toilet hygiene. Among these participants, 69.4% received education from their parents, 27.9% received education from their teachers, and 19% received education from health personnel (Table 4). These findings show that toilet hygiene education is usually provided by families. Similarly, Song et al.[2] indicated that spending more time with family and health education programs promote health in elementary school children. In the light of these results, it can be said that supporting, enhancing, and reinforcing primary toilet hygiene education provided by families in schools is very important. Therefore, regular education programs that last for at least 3 months provided for students, families, and school personnel by school nurses and supervision of students' toilet hygiene behavior, toilet hygiene, materials such as toilet paper etc. provided by school nurses may increase awareness on the topic.

When we evaluated the effectiveness of the toilet hygiene education, we observed that the mean baseline score of the experiment group was 65.64, the mean score obtained immediately after the intervention was 85.76 and the mean score obtained 3 months following the intervention was 87.17. The difference between pre- and post-intervention scores was found to be statistically significant ($p<0,001$) (Table 5). This difference demonstrates the effectiveness of the education program. In order to evaluate the continuity of education effectiveness in the experiment group, the assessment was repeated 3 months following the intervention. The maintenance of high mean scores 3 months following the intervention shows that the education was remembered. In a study, it was indicated similar results in 11 to 16-year-old secondary school children.[25] School also provides learning of lots of behaviors.[28] Therefore, health education provided at schools are important for children's health. In our study, correct use of toilets as well as correct hand washing techniques were taught via the Toilet Hygiene Education; thus, we prepared the way for protecting children from infectious diseases. In this way, we think that the risk of school absenteeism due to infectious diseases and disruptions in education would decrease. Positive behaviors acquired during early ages would continue to be practiced during adulthood and in turn, have a positive effect on public health.

It was determined that the mean baseline score of the control group was 60 and the mean score obtained 3 months following the intervention was 62.8 (Table 5). The difference between the two mean scores are statistically not significant ($p<0,05$). In our study, it was observed that the experiment group had higher scores and that there was no interaction between the experiment and control groups ($F=41.46$; $p<0,001$). Therefore, the difference is thought to be due to external factors (TV, newspapers, internet, etc.).

Conclusions

As a result of the present study, it was determined that toilet hygiene education is effective in children aged 7-12 years. We, therefore, recommend to repeat hygiene educations in school children for health promotion.

Implications for Practice

School/pediatric nurses play a key role in promoting correct hygiene habits and are responsible for providing counseling on health promoting behaviors (nutrition, hygiene, protection from accidents, sleep, exercise, and spare time activities, etc.) for school personnel and students' families as

well as for students.[29,30]

In the present study, toilet hygiene education was found to be beneficial for promoting correct hygienic information. The school/pediatric nurse can assign a student to observe toilets every day and ask students to report problems in hygiene practices. In this way, the behaviors of students who exhibit incorrect behaviors can be adjusted.

School/pediatric nurses should provide toilet hygiene education for families, teachers, students, and school personnel on a regular basis (once every 3 or 6 months) considering prospective remembering.[31] In addition, school nurses should examine toilets and basins in means of cleanness and sufficiency of soap, toilet paper, and paper towels, report the lack of such to the school management and cooperate with janitors.

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Author Contributions

Study desing: AFO
Data Collection and Analysis: ÇÇÖ, EA, HS
Manuscript Writing: ÇÇÖ, EA, AFO, HS

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Appendix 1: Student Information Form

1. Age:
2. Gender: 1.Girl 2. Boy
3. Class:
4. What is your mother's education status?
   1. Literate 2. Elementary school 3.Secondary school
4. High school 5.University 6. Illiterate
5. What is your father's education status?
   1. Literate 2. Elementary school 3.Secondary school
4. High school 5.University 6. Illiterate
6. Can you go to the toilet when you need to?
   1. Yes
   2. No (explain. For example: I get absorbed in games, the teacher doesn't let me, the toilets are too dirty, etc.)_____
7. How do you usually perform toilet hygiene?
   1. I use wet wipes
   2. I wet toilet paper and use it
   3. I wash with water
   4.I wash with water and soap
   5. I wipe myself with dry toilet paper
   6. I do not perform toilet hygiene.
8. What is your method of toilet hygiene?
   1. From front to back 2. From back to front 3. Random
9. When do you clean your perineal area? (you can choose more than one option.)
   1. Every time after urinating 2. Every time after defecation
10. How often do you change your underwear?
    1. Every day 2. Every 2-3 days 3. Once a week 4. Once every 15 days 5. Other__
11. When do you wash your hands? (you can choose more than one option)
    1.Before using the toilet
    2.After using the toilet
    3. Before meals
    4. After meals
    5. When I come home
    6. I do not wash my hands
    7.Other_____
12. What do you use for washing your hands?
    1. Only water 2. Water and soap 3. Wet wipes 4. Other _____
13. Did you receive toilet hygiene education before?
    1. Yes 2. No
14. If yes, from whom did you receive the education? (you can choose more than one option.)
    1. Health care team members (doctor, nurse, etc.)
    2. Parents
    3. Books
    4. Newspaper
    5. Teacher
    6. TV
    7. Internet
    8. Friends
    9. Other _____

Appendix 2: Toilet hygiene evaluation form (Pretest-posttest)

1. Which of the following include the definition of hygiene?
   a. Protecting ourselves and our environment from disease inducing microbes
   b. Making our environment dirty
   c. Touching septic and wet places
   d. Eating with dirty hands
   e. None of the above

2. Which of the following describe a non-visible cause of diseases?

a. Water b. Microbe c. Toilet paper d. Hand e. None

3. Which of the following can spread from unclean and non-hygienic toilets?

a. Dysentery b.Cholera c. Typhoid d. Jaundice e. All of the above

4. Which of the following is an indicator of us using the toilet in a **wrong** way?

a. Flushing
b. Turning off a tap that is running unnecessarily
c. Being careful about not splashing when we urinate
d. Stepping on the toilet bowl
e. Throwing the toilet paper in the trash

5. Emre goes home after playing with his friends in the outdoors. **Immediately after** changing his dirty clothes, he washes his hands. According to you, which of the following is among the reasons for Emre to wash his hands?
   a. Not to get sick
   b. Removing microbes
   c. Protecting himself and his environment
   d. Maintain hand hygiene
   e. All of the above

6. Which of the following is the **right behavior** for microbes **not to spread** after using the toilet?

a. Throwing toilet paper into the toilet bowl
b. Leaving the water running
c. Touching the doors with dirty hands
d. Flushing after closing the toilet lid
e. None of the above

7. Which of the following is among behaviors that make the toilet dirty?

a. Turning off taps that are running unnecessarily
b. Writing on toilet walls
c. Throwing garbage into the trash bin
   d. Flushing
   e. Turning off taps using the toilet paper that we dried our hands with

8. Which of the following is the **right** toilet hygiene method to apply?

a. Wiping with toilet paper only
b. Wiping with water only
c. Wiping with clean toilet paper first, then wiping with wet toilet paper and finally drying with clean toilet paper
d. Wiping with a fabric cloth
e. Wiping with wet wipes

9. Which of the following situations require washing hands?

a. Before and after using the toilet
b. Before and after meals
c. After petting animals
d. Coming home from outdoors

e. All of the above

10. Which of the following is the **right method for washing hands**?

a. Washing the palm and between the fingers by scrubbing them with a lot of water and soap
b. Washing by brushing fingertips and nail bases
c. Washing the palm, between fingers, finger tips, and nail bases with water and soap and including the wrists as well
d. Washing the whole hand by scrubbing under running water
e. None of the above