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The Effect of Video-Supported Hand-washing Training on Hand-washing Knowledge and Skills in Children in Need of Protection

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Abstract

Objective: Proper hand hygiene knowledge and skills in children are among the most basic practices in preventing infectious diseases. This study aims to evaluate the effect of video-supported hand-washing training given to children in need of protection on hand-washing knowledge and skills.

Method: The study was conducted with 85 children between the ages of 7-14 living in a child welfare institution in a province in Turkey. Hand-washing knowledge and correct hand-washing skills were assessed with a pre-test. Hand-washing knowledge and skills were re-evaluated immediately after the slide and video-supported training and three months later. Data were analyzed with statistical methods.

Results: When the children's hand-washing knowledge and correct hand-washing skills were compared after the training compared to before the training, a statistically significant difference was found compared to before the training ($p<.001$).Although a decrease was observed compared to the measurements immediately after the training in the three-month follow-up, the increase in knowledge and skills before the training continued positively.

Conclusion: It has been found that visual, auditory, and practical hand-washing training for children increases their success targets. Starting hand-washing training for children early and continuing with periodic monitoring will contribute to developing positive behavior and preventing infectious diseases.

Keyword: Hand-washing, Hand hygiene knowledge, Children, Video-supported training, Child Welfare Institution

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INTRODUCTION

Hand hygiene is an effective and inexpensive method for the protection and prevention of infectious diseases. Instilling hygiene habits in children is fundamental to establishing a healthy society. Children often have difficulty in maintaining basic hygiene practices. This can increase the risk of infection and lead to health problems. In addition to preventing many infectious diseases by gaining effective hand-washing habits and turning them into behaviors, it also reduces school absenteeism and the incidence of diseases transmitted through the digestive and respiratory systems. Studies show that correct implementation of hand-washing and gaining habits protect children from infectious diseases. (1–6)

Since hand hygiene education starts within the family, is reinforced in schools, and turns into behavior, this information and education must be accurate. Children are affected by many reasons such as family breakdown, increased mental problems within the family, alcohol and substance addiction, poverty, and unemployment, and the number of children in need of protection in our country is growing. In this case, the education of these children and their acquisition of good behaviors are often ignored.

Correcting incorrect hygiene practices that have become behaviors in adolescence or adulthood can be difficult. Therefore, children in need of protection who live in orphanages are generally disadvantaged and at-risk groups and hand-washing education is essential for these children. Studies show that the frequency of infection is related to hygiene habits (4).

The World Health Organization (WHO) stated that hygiene education and hand-washing development reduced diarrhea cases by up to 45%. At the same time, a study indicated that it caused a decrease of 6% - 44% in respiratory tract infections. As a result, it is stated that hygiene and hand-washing development studies are simple and cost-effective practices in terms of infectious diseases (7).

Providing planned education to protect and improve the health of individuals, families, and society is among the basic duties of nurses (8,9).

Since proper hand-washing is a behavior that children should exhibit throughout their lives, children should gain the skills to wash their hands properly by using educational materials that they can easily understand and that will increase their interest and desire, and by providing them with interactive applications (3,10).

In line with this information, the study aimed to determine the knowledge and correct hand-washing skills of children in need of protection in the age group of 7-14 and to evaluate the effectiveness of video-supported hand-washing training.

Research Hypotheses:

H0_1: Video-supported hand-washing education given to children in need of protection increases children's knowledge of correct hand-washing.

H0_2: Video-supported hand-washing education given to children in need of protection increases children's correct hand-washing skills.

METHODS

Research Type: Pretest-posttest, intervention and follow-up study

The Universe and Sample of the Research: The universe of this intervention-type research conducted in a Child Welfare Institution affiliated with the Family and Social Services Directorate in a province in Turkey between June and September 2023 consisted of 96 children between the ages of 7 and 14 living in a dormitory. The research consisted of three parts and 89 children participated in the first and second parts (survey, observation, education, and re-observation). The children were not participating because they went on leave with their volunteer families and relatives and did not volunteer. 85 children participated in the third part of the research (survey and re-observation). Four children did not participate in these parts of the research because they were “on leave” with their volunteer families. Four children who could not participate in the second part of the research were excluded to ensure the consistency of the comparative data before and after the training. The total sample of the study consisted of 85 children.

Inclusion Criteria for the Study

• Participants must be between the ages of 7-14

• Participants must be willing to participate in the study

•The Participant must not have any speech, hearing, perception, or vision problems

•Full-time residence and volunteer participation in the study.

Data Collection

The study's data was collected by face-to-face interviews and observations with the children in the dormitory where the children lived. Before starting the data collection, written institutional permissions were obtained from the Family and Social Policies Directorate and the children's dormitory, and verbal permissions were obtained from the teachers responsible for the children.

The data collection process consisted of three parts, and in the first part, a survey, observation, and training were conducted. The first part of the data collection included a survey form (3 min) including socio-demographic characteristics, information about hand-washing, and observation (3 min). Each student washed their hands in the sinks in the children's dormitory under the necessary environment, and the 'skill checklist' where their behaviors

were evaluated before the training was marked as "did" or "did not".

After the pre-test and hand-washing skills were evaluated, a PowerPoint presentation (8 min) was given for hand hygiene training and a video of correct hand-washing (5 min). Then, the children were taken to the sink individually and observed again by the same researcher who evaluated their hand-washing skills before the training.

Four people in the research team gave the training on gaining hand-washing skills.

In the third part of the data collection, after three months, a questionnaire form was filled out again regarding hand hygiene, and hand-washing skills were assessed using the “skill checklist”. The aim was to ensure they could apply the hand-washing skills following the steps.

Data Collection and Education Tools:

Survey Form: A form that includes sociodemographic information about children (age, gender, how many years they have stayed in a dormitory, whether they have received hand-washing training), questions about when and in what situations to wash hands.

Skill Checklist: A 10-item list containing the Proper Handwashing steps of the Republic of Turkey Ministry of Health.

Hand Hygiene Education: A PowerPoint presentation (8 minutes) prepared by researchers for children, including information on hand hygiene, when and how it should be done, etc.

Hand-washing Video: This video was prepared by researchers and lasted 5 minutes. It included the steps for proper hand-washing by the Republic of Turkey Ministry of Health.

Statistical Analysis of Data

The data obtained in the research was analyzed using the SPSS (Statistical Package for Social Sciences) for Windows 22.0 program. Descriptive statistical methods were used to evaluate the data: number, percentage, mean, and standard deviation. Parametric methods were used in the analysis of the data. Repeated measures ANOVA test and complementary Bonferroni test were used to compare the repeated measurements. Kurtosis (Kurtosis) and Skewness (Skewness) values were examined to determine whether the research variables showed a normal distribution.

Ethical Aspect of Research

For the implementation of the research conducted within the scope of the TUBITAK Student Project (2209/A No:1919B012217443), an ethics committee permit dated/numbered (23.03.2023-14/05) was obtained from the ethics committee of a university for non-interventional studies and an institutional permit from the Provincial Directorate of Family and Social Policies of the province where the study was conducted.

Verbal permission was obtained from the teachers and children in the dormitory before starting the survey. Students who were not volunteers were not included in the study.

RESULTS

According to gender, children were male 57.6%, the average “age” of the children was 8.880±2.078 (Min=7; Max=14), the average “years spent in a dormitory” was 3.470±2.229 (Min=1; Max=12), children who received hand-washing training were 64.7%, and according to where children received hand-washing training, 38.2% were families, 27.3% were daycare centers, and 34.5% were schools (Table 1).

The increase in the score of hand washing knowledge and skills is significant in the second and third measurements compared to the score in the first measurement ($p<0.05$) (Table 2, Fig 1).

When the hand-washing status scores of the children before and after the training were compared, it was found that there was a statistically significant difference in all items including hand-washing times compared to before the training ($p<.001$).Before the training, 96.5% of the children stated that they should wash their hands before eating, 97.6% after eating, 92.9% before and after using the toilet, 95.3% after coming home from outside, and 92.8% after touching garbage. In comparison, 68.2% responded correctly to washing their hands after touching money, newspapers, etc. After the training, 97.6% responded correctly to washing their hands before eating, 100% after eating, 98.8% before and after using the toilet, 98.8% after coming home from outside, 95.3% after touching garbage, and 91.8% after touching money, newspapers, etc. In the 3rd month follow-up, it was determined that the correct response rates were still high compared to before the training (Table 3).

In the observations of the children's hand-washing skills before the training, it was seen that 87.1% of the children applied the steps of "wet the hands and wrists with water", 91.8% of the children applied the steps of "sufficient soap is taken into the palm", 92.9% of the children applied the steps of "rinse the hands with plenty of water", 94.1% of the children applied the steps of "rub the backs of the hands with the palm of the other hand", "comb the palms and clean between the fingers", "clasp the hands and rub the fingertips", "rub the thumb in the palm of the other hand", "rub the fingertips in the palm of the other hand". It was seen that the scores displaying positive behaviors regarding the hand-washing situation increased after the hand-washing training. In the follow-up three months later, although there was a slight decrease in correct hand-washing skills, it was seen that a high rate of positive behaviors continued (Table 4.)

Table 1. Distribution of Children According to Descriptive Characteristics

Variable	**Frequency(n)**	**Percentage (%)**
Gender		
Male	49	57.6
Female	36	42.4
Hand-washing Education Status		
Yes	55	64.7
No	30	35.3
Where Did You Get Hand-washing Education		
Family	21	38.2
Dorm	15	27.3
School	19	34.5
	Mean	**SD**
Age	8.880	2.078
How Many Years Did You Stay in Dormitory	3.470	2.229

SD: Standard Deviation

Table 2. Hand-washing Knowledge and Hand-washing Skill Scores

	Hand-washing Knowledge Scores		**Hand-washing Skills Scores**	
	Mean	**Sd**	**Mean**	**Sd**
1. Measurement (Before training)	10.588	1.917	6.553	1.816
2. Measurement (After training)	11.600	1.125	9.106	1.423
3. Measurement (After 3 months)	11.412	1.147	8.741	1.698
F[b]	23.931		75.645	
p*	**0.000**		**0.000**	
Bonferroni	**1<2.3**		**1<2.3**	
Etakare	0.222		0.474	

***p<0,001**

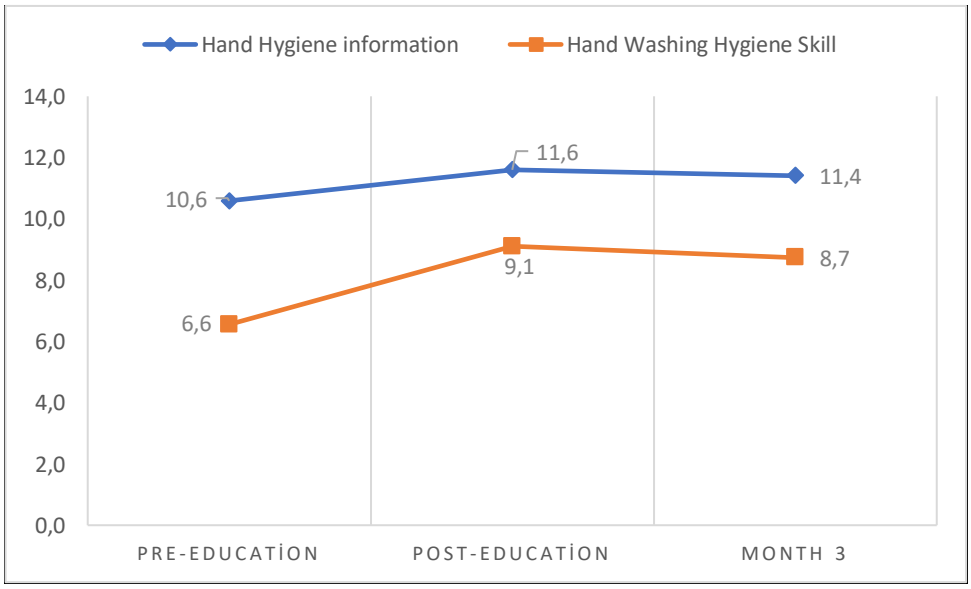

Figure 1. Hand-washing Knowledge and Hand-washing Skill Scores

Table 3. Distribution of Correct Answers for Hand-Washing Knowledge

	1. Measurement		2. Measurement		3. Month Later	
	n	**%**	**n**	**%**	**n**	**%**
Before eating	82	96.5	83	97.6	84	98.8
After eating	83	97.6	85	100	84	98.8
As soon as we wake up in the morning	75	88.2	84	98.8	84	98.8
Before going to bed at night	67	78.8	81	95.3	81	95.3
Before and after using the toilet	79	92.9	84	98.8	85	100
When we come from outside	81	95.3	84	98.8	85	100
After touching garbage	79	92.9	81	95.3	81	95.3
After sneezing and coughing	78	91.8	83	97.6	80	94.1
After touching wounds, pimples, etc.	69	81.2	80	94.1	76	89.4
After touching money, newspapers, etc.	58	68.2	78	91.8	69	81.2
After touching dirty items	75	88.2	81	95.3	78	91.8
After cleaning	74	87.1	82	96.5	83	97.6

Table 4. Hand-washing Skills Scores

	1. Measurement		2. Measurement		3. Month Later	
	n	**%**	**n**	**%**	**n**	**%**
Wet the hands and wrists with water	74	87.1	83	97.6	81	95.3
Take enough soap into the palm	78	91.8	83	97.6	81	95.3
Distribute the soap to all surfaces of the hands and lather thoroughly	69	81.2	80	94.1	81	95.3
Rub the backs of the hands with the palm of the other hand	59	69.4	78	91.8	76	89.4
Palms are brought together and the spaces between the fingers are cleaned	36	42.4	76	89.4	72	84.7
Clasp the hands and rub the fingertips	16	18.8	66	77.6	62	72.9
Rub the thumb in the palm of the other hand	34	40.0	69	81.2	57	67.1
Rub the fingertips in the palm of the other hand	32	37.6	70	82.4	65	76.5
Rinse the hands with plenty of water	79	92.9	85	100	83	97.6
Dry the hands with a clean towel or paper towel	80	94.1	84	98.8	85	100

DISCUSSION

Early childhood is an advantageous time to start education and develop correct behaviors before habits are established (4,11).

Using a competency-based education approach, the study was conducted with orphanage children. The “skill checklist” used in the study is a requirement of the approach above. When the hand-washing skills of the children were compared before, after and three months after the training, it was determined that most of the steps changed positively, it may be thought that the change in some steps was not “sufficient”. For example; “Hands are clasped and fingertips are rubbed”, “Thumb is rubbed in the palm of the other hand”, and “Fingertips are rubbed in the palm of the other hand” (Table 4). Although an increase was detected after the training, this progress may be considered insufficient. However, there is still a high positive increase compared to the pre-training rates.

While hand hygiene training in children aims to increase knowledge, it is also aimed to improve skills, and it is recommended that various methods such as interactive and applied teaching methods be used in skill training for knowledge and skills to turn into behavior (1,12–14).

Hand-washing education studies conducted with different methods and visual tools such as

slides, videos, and games have increased students' hand-washing knowledge and skills. (12,15–18).

In a study where hand-washing training was given to children under institutional supervision and protection through video presentation and demonstration methods, an increase in the student's knowledge and skill practices was achieved (1).

In the study, children's hand-washing knowledge levels increased after the training compared to before the training, and the H1 hypothesis was accepted (Table 2, Fig 1). In the study by Shrestha and Angolkar (2015), it was seen that the hand hygiene training given to the students effectively increased their level of hand-washing knowledge (19).

When the children's hand-washing information was examined before the training, it was seen that they washed their hands the most before eating (96.5%), after eating (97.5%), and when they came from outside (95.3%). The lowest responses before the training were after touching wounds and pimples (81.2%), after touching money, newspapers, etc. (68.2%), and after touching dirty objects (88.2%). When some studies in the literature were examined, it was stated that children washed their hands the most after using the toilet before the training (1,8,12,13,20).

The hand-washing skills of the children after the training increased compared to the pre-training period and the H2 hypothesis was accepted (Table 2, Figure 1). The most frequently applied hand-washing steps before the training in the study were; to wet the hands and wrists with water (87.1%), take enough soap in the palm (91.8%), rinse the hands with plenty of water (92.9%) and dry the hands with a clean towel or paper towel (94.1%). The least frequently applied steps by the students before the training were; bringing the palms together and cleaning the spaces between the fingers (42.4%), clasping the hands and rubbing the fingertips (18.8%), rubbing the thumb in the palm of the other hand (40%), rub the fingertips in the palm of the other hand (37.6%) (Table 4). The literature has different results on applying the hand-washing steps before the training (8,13,21).

Studies conducted on children in need of protection and cared for in institutions have shown that separation from family at a young age, institutionalization, the absence of a permanent caregiver, and the inability to establish a secure attachment relationship contribute significantly to the development of mental disorders in these children (22,23).

Yektaş and Tufan found major depression in 24.6% of the children in a study they conducted in a child protection institution in Turkey (24).

The World Health Organization (WHO) has emphasized that depression can significantly impair an individual's ability to function at work or school and cope with daily life (25).

It is observed that children living in orphanages may have inadequate hand-washing behaviors due to their tendency to depression and that their rates of contracting and transmitting infectious diseases will increase. Slekiene and Mosler (2018) stated in their study that depression negatively affects individuals' work, school, and daily behaviors and stated that hand-washing habits are inadequate in children with depression (26).

Proper hand hygiene has been recommended as the most effective method in preventing global epidemics in recent years. It is thought that being more careful, especially for children in need of protection staying in orphanages and developing the right knowledge and skills will reduce the risk of infection.

Time is needed for an individual to turn a practice into a behavior. In our study, even if there is an increase in knowledge and skill levels after the training, observation-based research can be conducted again after six months to monitor whether this turns into a behavior.

The participation rate is 88.5%. The limited number of participants in the study is a restrictive factor for the analysis. Studies with more participants can be conducted to eliminate this limitation..

CONCLUSION

was determined with the knowledge and skills teaching. Providing early hand-washing knowledge and skills training is appropriate, especially for children in public places. Health professionals should implement hygiene training, which is sufficient for children to acquire knowledge about hand hygiene and to develop positive behaviors, and this training should be repeated regularly at certain intervals. It will be supportive to provide skill training to children during learning behaviors and to provide techniques such as video presentation and demonstration at this stage.

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Ethics Committee Approval: Ethics committee approval was received for this study from 23.03.2023-14/05 Clinical Research Ethics Committee of Kocaeli Health and Tecnology University.

We state that the parents have given their written informed consent to be involved in the study, in accordance with the Declaration of Helsinki.

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