

Evaluation of the Effectiveness of Hand Hygiene and Nutrition Training for Semi-Urban and Rural Primary School Students in Haliliye District of Şanlıurfa

Şanlıurfa Haliliye İlçesindeki Yarı Kentsel ve Kırsal Bölge İlkokul Öğrencilerine Yönelik El Hijyeni ve Beslenme Eğitiminin Etkinliğinin Değerlendirilmesi

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ABSTRACT

Background: The study was conducted to evaluate the effectiveness of nutrition and hand hygiene training for third-grade students in 12 primary schools in Şanlıurfa.

Method: This is an intervention study. It was conducted between the dates of December 2018 and May 2019. The population of the study consisted of 10165 third-grade students in 113 schools located in Şanlıurfa. The study sample consisted of 1206 students attending 12 primary schools.

Results: The mean score of the control group was 6.2 ± 2.1 , while the mean score of the intervention group was 10.4 ± 1.8 in hand hygiene training; and the mean score of the control group was 2.9 ± 0.6 , while the mean score of the intervention group was 3.3 ± 0.4 in nutrition training. There was a significant increase in the intervention groups in both training modules ($p < 0.05$).

The control and intervention group scores were 6.3 ± 2.1 and 10.6 ± 1.8 in the semi-urban area, and 5.8 ± 2.0 and 10.1 ± 1.7 in the rural area in hygiene training.

The control and intervention group scores were 2.9 ± 0.6 and 3.4 ± 0.6 in the semi-urban area, and 2.9 ± 0.6 and 3.4 ± 0.7 in the rural area in nutrition training. The increase in the intervention group between the areas was found to be significant in both trainings ($p < 0.05$).

Conclusion: Hand hygiene and healthy nutrition trainings increased the knowledge and skills of the students. It is thought that the trainings are successful thanks to the content of the given training subjects compatible with the age of the students, the active participation of the students in the trainings, and the fact that the trainings were given by expert health professionals. The cooperation of school and health institution should be ensured for successful health training.

Keywords: Health training, school, hand hygiene, nutrition

ÖZET

Amaç: Araştırma, Şanlıurfa Haliliye İlçesi'nde 12 ilköğretim okulunda 3. sınıf öğrencilerine yönelik beslenme ve el hijyeni eğitimlerinin etkinliğini değerlendirmek amacıyla yapılmıştır.

Yöntem: Araştırma müdahale tipindedir. Aralık 2018-Mayıs 2019 tarihleri arasında yapılmıştır. Araştırma evrenini Şanlıurfa Haliliye ilçesine bağlı 113 okuldaki 10165 3. sınıf öğrencileri oluşturmaktadır. Araştırma örneklemini, 12 ilkokulda eğitime devam eden 1206 öğrenciden oluşmuştur.

Bulgular: El hijyeni eğitiminde kontrol grubunun puan ortalaması $6,2 \pm 2,1$ iken, müdahale grubunun puan ortalaması $10,4 \pm 1,8$, beslenme eğitiminde kontrol grubunun puan ortalaması $2,9 \pm 0,6$ iken müdahale grubunun puan ortalaması $3,3 \pm 0,4$ dür. Her iki eğitim modülünde de müdahale gruplarında anlamlı bir artış saptanmıştır ($p < 0,05$).

Hijyen eğitiminde kontrol ve müdahale grubu puanları yarı kentsel bölgede $6,3 \pm 2,1$ ve $10,6 \pm 1,8$, kırsal bölgede ise $5,8 \pm 2,0$ ve $10,1 \pm 1,7$ 'dir.

Beslenme eğitiminde kontrol ve müdahale grubu puanları yarı kentsel bölgede

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2,9±0,6 ve 3,4±0,6, kırsal bölgede ise 2,9±0,6 ve 3,4±0,7 'dir. Her iki eğitimde de bölgeler arasında müdahale grubundaki artış anlamlı bulunmuştur(P<0,05).

Sonuç: El hijyeni ve sağlıklı beslenme eğitimleri öğrencilerin bilgi ve becerilerini arttırmıştır. Verilen eğitim konularının içeriğinin öğrencilerin yaşları ile uyumlu olması, öğrencilerin eğitimlere aktif katılımının sağlanması, eğitimleri konunun uzmanı sağlık profesyonellerinin vermesi nedeniyle eğitimlerin başarılı olduğu düşünülmektedir. Başarılı sağlık eğitimi için okul ve sağlık kurumu işbirliği sağlanmalıdır.

Anahtar kelimeler: Sağlık eğitimi, okul, el hijyeni, beslenme

INTRODUCTION

School is one of the places where the impacts related to socialization and crowded life are observed more clearly for children. Infectious disease agents can be transmitted in schools in a short time, and many children may be affected since their immune system which is not sufficiently enhanced cannot cope with these agents(GÜN, 2011). Poor hand hygiene, in particular, further accelerates the exposure to respiratory and gastrointestinal infections in these children. These infectious diseases lead to disruption of school attendance and subsequent school failures as well as adversely affecting their growth and development(Willmott et al., 2016). On the other hand, school-age children need an adequate and balanced diet for growth and development, learning activities and physical activities ("FAO," 25.02.2019). Therefore, both parents and children should be informed about healthy nutrition.

Health training is a set of practices and activities designed to help individuals and communities improve their health by increasing their levels of knowledge or influencing their attitudes ("WHO," 25.02.2019). It is one of the most important components of school health programs conducted in order to ensure the best possible mental, physical and social health of school-age children (*Halk Sağlığı Temel Bilgiler 1*, 2015). An effective school health program is also one of the most cost-effective investments a country can make to improve education and health. The World Health Organization (WHO) promotes the implementation of school health programs to prevent major health problems among children and young people. Interventions to change educational, economic, social and political conditions that facilitate the emergence of these problems can be included in the education sector with these programs.

In parallel with the problems faced, the most promoted programs in schools are related to nutrition and hygiene ("WHO," 25.02.2018). Research shows that the frequency of diarrhea, pneumonia and cold cases have decreased in children receiving hand hygiene training (Clark, Henk, Crandall, Crandall, & O'Bryan, 2016; Luby et al., 2005). On the other hand, students' diets can be improved by preparing healthy school meals, and this information can be spread to families and society through food and nutrition trainings. As a result of these efforts, nutritional behaviors improve, the ability to choose the appropriate nutrients develops, and long-term anthropometric measurements of children change positively("FAO," 25.02.2019; Meiklejohn, Ryan, & Palermo, 2016).

The aim of this study is to provide nutrition and hand hygiene trainings for third-grade students in 12 primary schools located in Haliliye district of Şanlıurfa and to evaluate the effectiveness of these trainings.

MATERIALS AND METHODS

This is an intervention study. It was conducted between the dates of December 2018 and May 2019.

The study area is located in the district of Haliliye. Haliliye is the second largest central district of Şanlıurfa in terms of population. The people living in the study area has a low socioeconomic level. Nearly half of them live in semi-urban or rural areas. The number of families who earn their living from seasonal agricultural labor is quite high(Koruk, 2010).

The study population consisted of 10165 third-grade students in 113 schools located in Haliliye district of Şanlıurfa.

The study sample consisted of 1206 third-grade students in 12 primary schools, 9 of which were in the rural area and 3 of which were in the semi-urban area. The schools were determined by the non-probability sampling method. 960 (79.6%) students could participate in the hygiene training group and 1038 (86%) students could participate in the nutrition training group due to absenteeism as a result of intensive seasonal agricultural labor in the area where the study was conducted, mass migration of the families, the use of the students as labor force in this sector and other health problems.

The practice of the study: The participants were divided into two groups as the intervention group and the control group for both trainings. The groups were randomly selected in each school. If there were more than 3 class branches in the same school, classes were numbered, and the odd-numbered ones were taken to the intervention group and the even-numbered ones were taken to the control group.

The control group was evaluated first in all schools. The intervention group was then given an interactive training of approximately 40 minutes. The evaluation of the intervention was made 4 weeks after the training. Those who were in the intervention groups in nutrition or hand hygiene training at the beginning were included as the control groups in the other training. After the intervention evaluations were completed, the trainings were also provided to the control groups.



The content of the hand hygiene module consisted of adopting the definition and concept of germs, contamination places of germs, situations requiring hand washing, hand washing steps, ball game and hand washing practice after the game.

The content of nutrition training consisted of the nutrition concept and physiology, concept of harmful and beneficial foods, determination of negative nutritional behaviors by reading a story about harmful nutrition, introduction of groups with images showing the foods from protein, calcium, vitamin and carbohydrate groups and balanced food preparation practice.

In data collection, the hand hygiene evaluation form, nutrition evaluation form and hand washing skill form were used.

10 images were used in the hand hygiene evaluation process. The student was asked to select 4 images that require hand washing. 1 point was given for each image selected correctly. The images represented situations such as before eating, after the toilet, after playing games outside, after coughing and sneezing into hand, tying shoelaces, writing, wearing clothes, carrying books or bags, playing games at home and touching the table.

The hand washing skill form included 9 stages of hand washing process.

1. Wetting hands by slightly turning the faucet on
 2. Taking small amounts of liquid soap into the palm and foaming thoroughly
 3. Rubbing the back of hands and palms
 4. Rubbing by interlacing the fingers
 5. Rubbing the nails with the palms
 6. Rubbing the thumbs of hands
 7. Rubbing the wrists
 8. Rinsing hands thoroughly with water
 9. Hand drying with paper towel, turning the faucet off with the paper towel and throwing the paper towel in the trash.
- Each correct step was evaluated as 1 point. The evaluation of hand hygiene training was made over a total of 13 points.

10 images were used for breakfast and 10 images were used for dinner in the nutrition evaluation process. The student was asked to select 4 images from these in order to create a balanced meal according to the food clover. 1 point was given for each food group selected correctly.

Correct hand washing and nutrient selection in accordance with the food clover were dependent variables of the study.

For the study, permission was obtained from Haliliye District Governorship with the letter dated 07/01/2019 and

numbered 34182645-604.99 E.35. Approval was obtained from the Non-Interventional Research Ethics Committee of Harran University Faculty of Medicine with the session dated 11/03/2019 and numbered 03.

Data analysis was made using SPSS 20.0 package program. The Student's t-test was used in the evaluation of the mean measurements between the two groups. The chi-square test was used in the analysis of categorical data. A value of $p < 0.05$ was considered statistically significant.

RESULTS

32.6% (338) of the students were receiving education in the rural area and 67.4% (700) were in the semi-urban area. 47.7% (495) of the students were female and 52.3% (543) were male. The mean age of the students was 8.5 ± 0.6 and the median age was 8 (min = 7 max = 10).

In hygiene training, 54.7% (268) of the control group and 55.2% (258) of the intervention group consisted of male students. There was no significant difference between the control and intervention groups in terms of gender ($\chi^2 = 0.04$ $p = 0.83$). The median age of the control and intervention groups was 8 (min: 7 max: 10). There was no statistically significant difference between the groups in terms of age ($t = 1.25$ $p = 0.21$). The students participated from rural area schools were at the proportion of 32.8% (153) in the intervention group while they were at the proportion of 27.8% (137) in the control group. There was no significant difference between the groups in terms of participation from the rural and semi-urban areas ($\chi^2 = 2.58$ $p = 0.10$).

In nutrition training, 50.4% (259) of the control group and 54.2% (284) of the intervention group consisted of male students. There was no significant difference between the control and intervention groups in terms of gender ($\chi^2 = 1.36$ $p = 0.25$). The median age of the control and intervention groups was 8 (min: 7 max: 10). There was no statistically significant difference between the groups in terms of age ($t = 0.81$ $p = 0.42$). The students participated from rural area schools were at the proportion of 32.6% (171) in the intervention group while they were at the proportion of 32.5% (167) in the control group. There was no significant difference between the groups in terms of participation from the rural and semi-urban areas ($\chi^2 = 0.00$ $p = 1.00$).

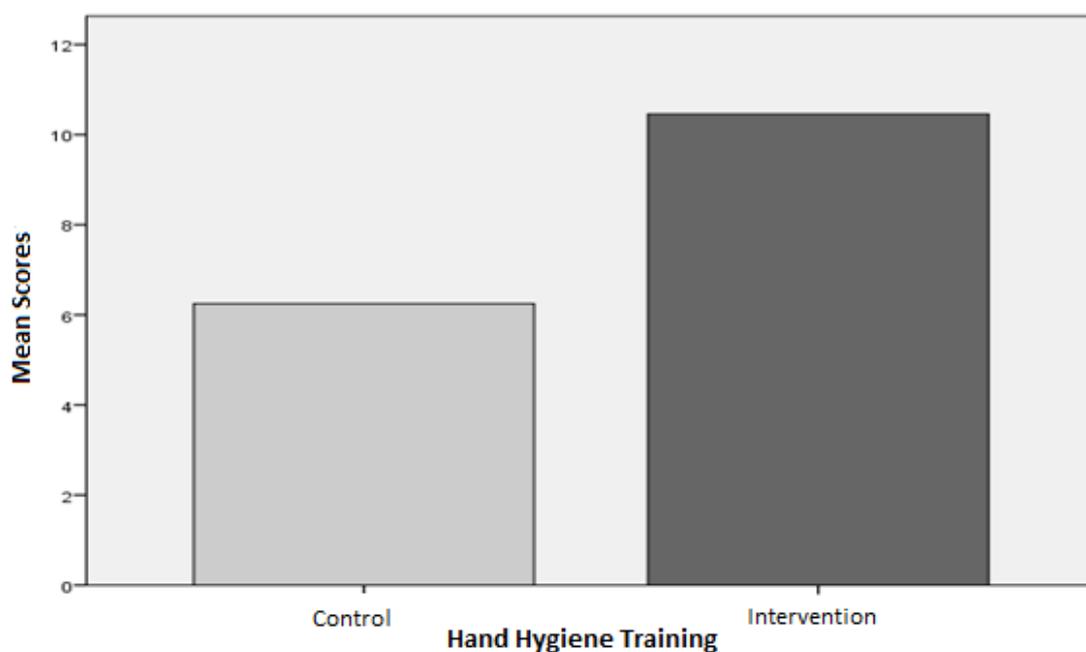
While the mean score of the control group was 6.2 ± 2.1 , the mean score of the intervention group was 10.4 ± 1.8 for hygiene training. A statistically significant increase was observed in the intervention group ($p < 0.05$). While the mean score of the control group was 2.9 ± 0.6 , the mean score of the intervention group was 3.3 ± 0.4 for nutrition training. A statistically significant increase was observed in the intervention group ($p < 0.05$). (Table 1, Graph 1, Graph 2)



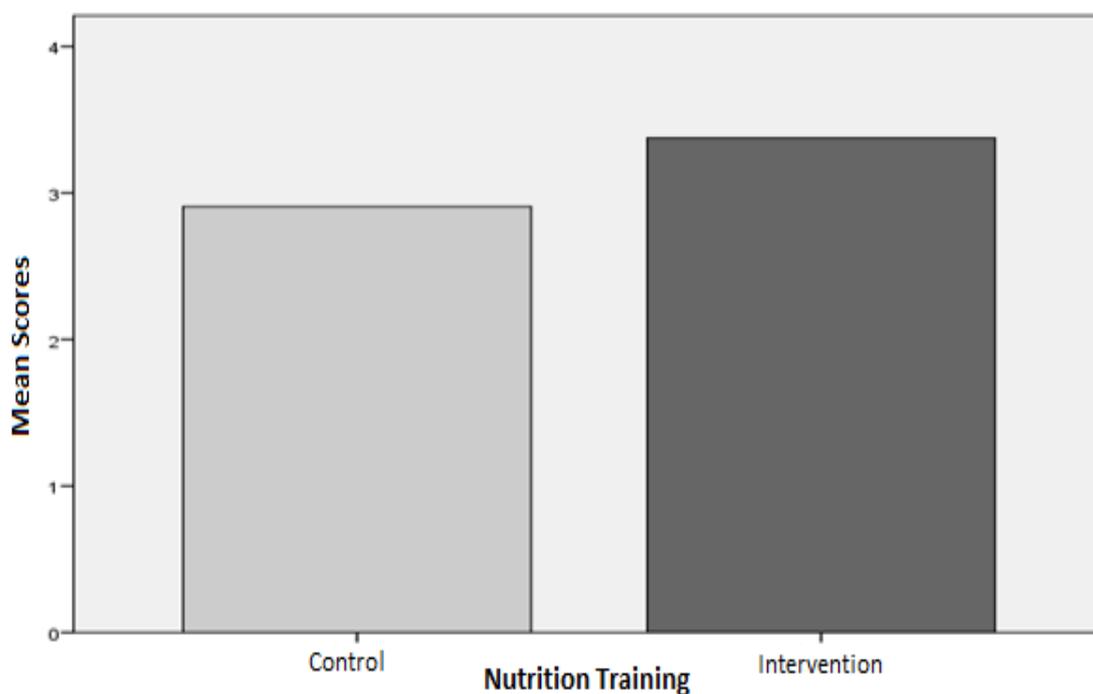
Table1. Mean scores of the control and intervention groups in terms of hygiene and nutrition trainings

Training Group		N	Mean \pm SD*	t	p
Hygiene Training	Control	493	6.2 \pm 2.1	-32.7	< 0.001
	Intervention	467	10.4 \pm 1.8		
Nutrition Training	Control	514	2.9 \pm 0.6	-11.5	< 0.001
	Intervention	524	3.3 \pm 0.6		

*Standard Deviation



Graph 1. Mean scores of the control and intervention groups in terms of hygiene training



Graph 2. Mean scores of the control and intervention groups in terms of nutrition training



The control and intervention group scores were 6.3 ± 2.1 and 10.6 ± 1.8 in the semi-urban area, and 5.8 ± 2.0 and 10.1 ± 1.7 in the rural area in hygiene training. The increase in the intervention group was found to be significant in both areas ($p < 0.05$) (Table 2). The control and intervention group scores were 2.9 ± 0.6 and 3.4 ± 0.7 in the semi-urban area, and 2.9 ± 0.6 and 3.4 ± 0.7 in the rural area in nutrition training. The increase in the intervention group was found to be significant in both areas ($p < 0.05$) (Table 2).

Table 2. Mean scores of the control and intervention groups in terms of hygiene and nutrition trainings

Training Group	Area Status		N	Mean \pm SD*	t	p
Hygiene Training	Semi-Urban Area	Control	356	6.4 ± 2.1	-26.9	< .001
		Intervention	314	10.6 ± 1.8		
	Rural Area	Control	137	5.9 ± 2.0	-19.1	< .001
		Intervention	153	10.2 ± 1.7		
Nutrition Training	Semi-Urban Area	Control	347	2.9 ± 0.6	-9.4	< .001
		Intervention	353	3.4 ± 0.6		
	Rural Area	Control	167	2.9 ± 0.6	-6.6	< .001
		Intervention	171	3.8 ± 0.7		

*Standard Deviation

DISCUSSION

An important part of this study group consisted of the students living in the semi-urban area. The median age of the students was 8 in accordance with the school grade they attended. The distribution of boys and girls was similar.

The health training intervention conducted in the schools in Haliliye district of Şanlıurfa has provided significant success in the knowledge and skills of the students' hand hygiene. Similar results are also observed in studies both in Turkey and in other countries. Tamiru et al. showed that there was a significant increase in hygiene knowledge and skill levels of the students with an intervention for students with an average age of 13 in the rural area of Ethiopia. Many methods such as visual and auditory materials, posters, role playing, school media, establishing a health club and peer discussions were stated to be used in this study (Tamiru et al., 2017). Mukherjee et al. achieved successful results on hygiene by using methods such as graphs, posters and teacher trainings for students with an average age of 7 in two slum areas in India (Mukherjee et al., 2014). Learning may be possible with different methods for each student and the variety of materials used can be an increasing factor in learning (Kablan, Topan, & Erkan, 2013). It is probably aimed to make students understand more easily by using more than one method in all studies. Again, hand washing steps and hand washing requiring situations were evaluated by separate methods in training interventions for students between the ages of 8 and 13 in Ankara and Sivas, and a general increase was observed in the knowledge and skills of the students after the trainings (ASLAN et al., 2006; Bilgin, Evcili, Kaya, & Bekar, 2016; Kitiş & Bilgili, 2011; Şahin et al., 2008). It is noteworthy that more than one method such as the use of visual equipment, ensuring interactive participation of the students and gamification were used in these trainings. These results show that different methods can be preferred in school trainings for each community or group. Again, it should not be ignored that the fact that these

trainings were given by health professionals contributed positively to this success.

In this study, the ability to create the right meal for balanced nutrition in children with nutrition training was found to be higher in the intervention group compared to the control group. A significant increase in the level of knowledge with nutrition training was also shown in the trainings provided by La Torre et al. and Viggiano et al. in similar ways. Even though the nutrition training technique is different in the studies, the final outcome shows that the trainings increase the nutritional knowledge level of the people (La Torre et al., 2017; Viggiano et al., 2015). As a result of this study, it is thought that the use of local foods and gamification methods during the training may have also been effective. In fact, games are known to increase entertainment, allowing information to remain in memory for longer (Viggiano et al., 2015).

Increased knowledge level was observed both in the semi-urban and rural areas as a result of the trainings in this study. Although Yılmaz et al. have reported that the hygiene behaviors of students in rural areas are lower compared to urban areas, it may be possible to reduce the difference among students with training (Yılmaz & Özkan, 2009). It is observed that short-term trainings lead to important changes in knowledge and skills. However, further studies are needed to determine the extent to which these trainings are effective in turning them into behavior and sustaining them.

CONCLUSION AND RECOMMENDATIONS

This study showed that hygiene and healthy nutrition trainings that were provided increased the knowledge and skills of the students both in the rural and semi-urban areas. It is thought that the trainings are successful thanks to the content of the given training subjects compatible with the age of the students, the active participation of the students in the trainings, and the fact that the trainings were given by expert



health professionals. The cooperation of school and health institution should be ensured for successful health training.

It is necessary to maintain positive physical conditions of schools especially in order to complement hygiene trainings. For this purpose, toilets and sinks should be kept clean, water, soap and toilet paper should be available in the toilets.

School canteens should have appropriate products to support the development of children. Information (brochures, conferences, etc.) should also be provided for parents who prepare food at home.

Reinforcing efforts should be taken to turn the gained knowledge into behavior. For this purpose, parents and teachers should encourage and be models to children on right behaviors.

A limited decrease in participation due to intensive seasonal agricultural labor and seasonal migrations in the area where the study was conducted constitutes the limitation of this study.

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