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Impact of Personal Hygiene Education Based on Social Learning Theory on Preschool Children

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Abstract

Preschool education holds immense significance during early childhood development as it equips children with vital knowledge, skills, and a strong groundwork for lifelong learning and behavior. In this educational process, social learning theory helps explain how small children develop behavior patterns. The purpose of this study was to implement a personal hygiene education program based on social learning theory and subsequently to assess its effectiveness. Our experiment employs a pre-test, post-test, control group experimental design. The target population comprised 65 kindergartners between the ages of 5 and 6 in the central district of Zonguldak Province, Turkey. Data collection for the study was sourced from the Personal Information Form, Health Education Scale for Preschool Children, and Control List for Children's Oral and Dental Health. After personal hygiene training, both the control and intervention groups showed an increase in scale scores, while the increase in hand washing and oral dental health scores was significantly higher for the intervention group. These results indicate that the systematic, effective implementation of preschool education yields improvements in the child's existing skills across all developmental domains while also introducing new skills. Personal hygiene, which is encouraged to be practiced both at home and school, is an observable behavior that signifies this sort of developmental progress.

Keywords Hygiene education · Social learning theory · Preschool children · Oral and dental health

Introduction

Preschool education is a learning experience that focuses on holistic developmental goals (UNESCO, 2019; Yılmaz, 2018). Children pass through a crucial developmental stage during preschool, and this formative process initiates the foundation for the knowledge, skills, and behaviors they will need and exhibit throughout life (Jung & Lee, 2019; Rimm-Kaufman et al., 2000; World Bank, 2018).

Children grow through different stages characterized by developmental tasks, which are responsibilities that, upon acquisition, need to be fulfilled throughout their lives. Basic self-care skills such as eating, dressing independently, and washing of the hands and face are among the developmental tasks children are expected to learn in preschool. It is noted that children who can perform these tasks exhibit self-control capacities that contribute to the child's overall feeling of self-esteem (Çelik & Şahin, 2021; Ma et al., 2020; McFadyen-Ketchum et al., 2021; Sarı, 2019). Self-care skills are among the fundamental behaviors that should be present in a physically and psychologically healthy person (Dinçer et al., 2017; Ertem & Ergün, 2018).

Although hygiene habits are a personal matter, they are most easily fostered as part of the overall socialization that takes place in preschool. Children are highly receptive to educational input during this period, so adult guidance can help them acquire and internalize practices of proper hygiene. Following basic instructions, these taught behaviors become habits that are sustainable into adulthood and

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throughout life. The child first imitates family members, then later observes and models teachers and peers in educational settings. Thus, the child gradually becomes an individual who pays attention to personal hygiene and environmental cleaning as part of her active participation in society as a healthy, properly socialized citizen (Centers for Disease Control & Prevention, 2021; Güneş et al., 2021; Haileselassie et al., 2021; Rathod et al., 2020).

Every child has a different capacity for regulating his own thoughts and behaviors, and these distinctions direct personal choices. Based on the role of individuality in learning, it is known that each child has unique learning strategies and styles (Güneş, 2017; Miyake & Friedman, 2012). Psychologists such as Neal Elgar Miller, John Dollard, and Albert Bandura have done research that explains how people observe the behaviors of others around them and the consequences of those behaviors. Then, the observer imitates the positive behaviors and refrains from those that result in obviously negative outcomes (Bayrakcı, 2007). Learning by observation is associated with visual and social learning theories. Individuals acquire new behaviors and skills by observing models in their environment, and preschoolers provide a perfect example (Radesky et al., 2015; Steffensky & Zander, 2019).

As he studied learning by analyzing children's behavior, Albert Bandura suggested that whether or not we choose to imitate a model's behavior depends on whether we see the model reinforced or punished (Bandura, 1977; Bandura & Hall, 2018). He observed that children acquire their behavior, value judgments, and social behavior relative to degrees of reward and punishment, as well as through relationships with their environment (Eryılmaz, 2016). In Bandura's theory of social learning, family, peers, environment, social factors, teachers, and pedagogy play major roles in children's adoption of positive health behaviors. This theory posits three types of modeling stimuli. In the first, a real person (living model) demonstrates a desired behavior. The second stimulus type is a real or fictional character or person depicted in different platforms through media such as film, television, the internet, books and radio (symbolic model). Verbal directives stimulate the person to follow instructions for behavior (Bandura, 1977). Social learning has been widely recognized as a basic learning process for most cognitive, affective, and psychomotor skills that are acquired by preschoolers (Bandura, 1977; Bandura & Hall, 2018). Children also take role models by identifying with the characters they see in cartoons or animated films; they may learn and internalize information easier from their favorite heroes than through instructional information; Çelen, 1999; Erşan & Hasan, 2022; Şahin, 2019).

Scientists have also determined that children model adult behaviors in their games (Bandura, 1969; Kan, 2014). Children at play imitate their parents and other adult role models in social processes such as alphabet knowledge, language development, value judgments, academics, and social behaviors (Ezell & Justice, 2000; Horner, 2004; Ledford & Wolery, 2015; Velez et al., 2021; Wörle et al., 2020; Yussen, 1974; Zhai et al., 2023). There are also studies confirming that preschool children imitate the hygiene skills of their elders, with indirect data obtained as a result of practices that occur in the normal course of life without a dedicated program (Iqbal et al., 2022; Wallace Moore, 2021). However, there is limited literature on the results of following a program based on social learning in order to make learning fun, lasting, and easy in preschool. Besides, according to the theory that includes psychomotor acquisitions and concretization of behaviors, learning is reflected in life by focusing on the cognitive field through processes such as attention, remembering, creating behaviors, and motivation (Malekzadeh et al., 2021). However, high-level evidence that confirms this is needed before we can understand the effect of teaching psychomotor skills through social learning. The ideal is to develop a curriculum that is reasonable to implement, effective. and does not require a special time allocation for self-care skills. Therefore, the aim of this study was to examine how social learning theory is applicable to a program designed to teach hand washing and tooth brushing skills to preschool children.

Methods

Aim and Hypotheses

The aim of this study was to examine the effectiveness of an education program based on social learning theory, which emphasizes the importance of education through observing role models. We consider this model as a means of promoting personal hygiene behaviors such as hand washing and tooth brushing during the preschool period.

H1 An education program based on social learning theory will be effective in promoting hand hygiene behaviors in children.

H2 An education program based on social learning theory will be effective in promoting tooth brushing behaviors in children.

Design and Sample

Our experiment employed a pre-test, post-test, control group experimental design. The target population comprised 65 children between the ages of 5 and 6 attending a randomly selected kindergarten in the central district of Zonguldak Province, Turkey, under the supervision of the Provincial

Directorate of National Education. The study was conducted between March and April 2023.

Selected participants included in the sampling had no diagnosed cognitive, physical, or mental disabilities. Power analysis conducted using G*Power 3.0.10 software indicated that a total sample size of 60 (intervention group: n = 30, control group: n = 30) would provide sufficient power of 80% with a 5% margin of error for a 2-group (intervention and control) pre-test post-test repeated measures design. There are a total of 82 children in the selected kindergarten (4 classes). Twelve parents did not consent to their child's participation in the study. Considering potential attrition, the study proceeded with the remaining 70 students, and a pre-test was conducted. Subsequently, no significant differences were observed in the pre-test scores across all classes in terms of gender and age ($p > 0.05$). Consequently, the class sections were randomly assigned to the intervention and control groups in a manner that ensures equal distribution, taking into account potential within-class effects. This random assignment was performed based on class sections, ensuring a balanced distribution between the two groups (see Table 1).

Three children from the intervention group were excluded from the analysis as they did not participate in at least two out of the three training sessions. Additionally, post-test results were not received from two children in the control group. Consequently, the study concluded with a final sample size of 32 children in the intervention group (n = 32) and 33 children in the control group (n = 33) (refer to Fig. 1).

Measures

The data were collected using the Personal Information Form, Health Education Scale for Preschool Children, and Control List for Children's Oral and Dental Health.

The Personal Information Form

The form consists of 11 questions that include sociodemographic data such as the child's gender, date of birth, age of starting school, number of siblings, mother's education level, father's education level, mother's age, mother's occupation, father's age, and father's occupation.

The Health Education Scale for Preschool Children–Hygiene and Self-Care

This scale was developed by Aydos and Tuğrul (2015) to evaluate the acquisition of behaviors that promote healthy development in preschool children. It focuses on sleep, nutrition, mental health, social relationships personal safety and first aid, hygiene, and self-care. It is also a tool that helps identify and prevent abuse and neglect. Each of the six subscales on the Health Education Scale is measured with a different number of items: Personal Safety and First Aid (PSFA) = 25 items; Hygiene and Self-care (HS) = 26 items; Nutrition (N) = 20 items; Sleep (S) = 7 items; Mental Health and Social Relationships (MHSR) = 20 items; Neglect and Abuse (NA) = 19 items. The scale consists of a total of 117

Table 1 Group comparisons based on pre-test scores, age means, and gender, according to their class divisions

Scales	Sections	$\underline{X}$	±SD		Sum of squares	df	Mean square	F	Sig.
Oral health checklist	1st division	30.1875	6.84318	Between groups	187.347	3	62.449	1.391	.254*
	2nd division	27.8235	7.17840	Within group	2738.038	66	44.886		
	3rd division	29.4000	6.17368	Total	2925.385	69			
	4th division	28.2941	6.50735						
Hygiene and self-care scale	1st division	57.1875	1.04682	Between groups	3.538	3	1.179	1.692	.178*
	2nd division	57.8235	.52859	Within group	42.524	66	.697		
	3rd division	57.5333	.52859	Total	46.062	69			
	4th division	57.5538	.84836						
Age	1st division	5.353	.4926	Between groups	.190	3	.063	.269	.848*
	2nd Division	5.389	.5016	Within group	15.581	66	.236		
	3rd division	5.250	.4472						
	4th division	5.368	.4956	Total	15.771	69			
		Female	Male		t	df	Mean diff.	Std. err	Sig.
Gender	1st division	8	9	Equal var. assumed	.818	33	.14052	.1717	.419**
	2nd Division	11	7						
	3rd division	6	10	Equal var. not assumed	.817	32.76	.14051	.1719	.420**
	4th division	8	11						

*One-way ANOVA

**Independent samples t-test

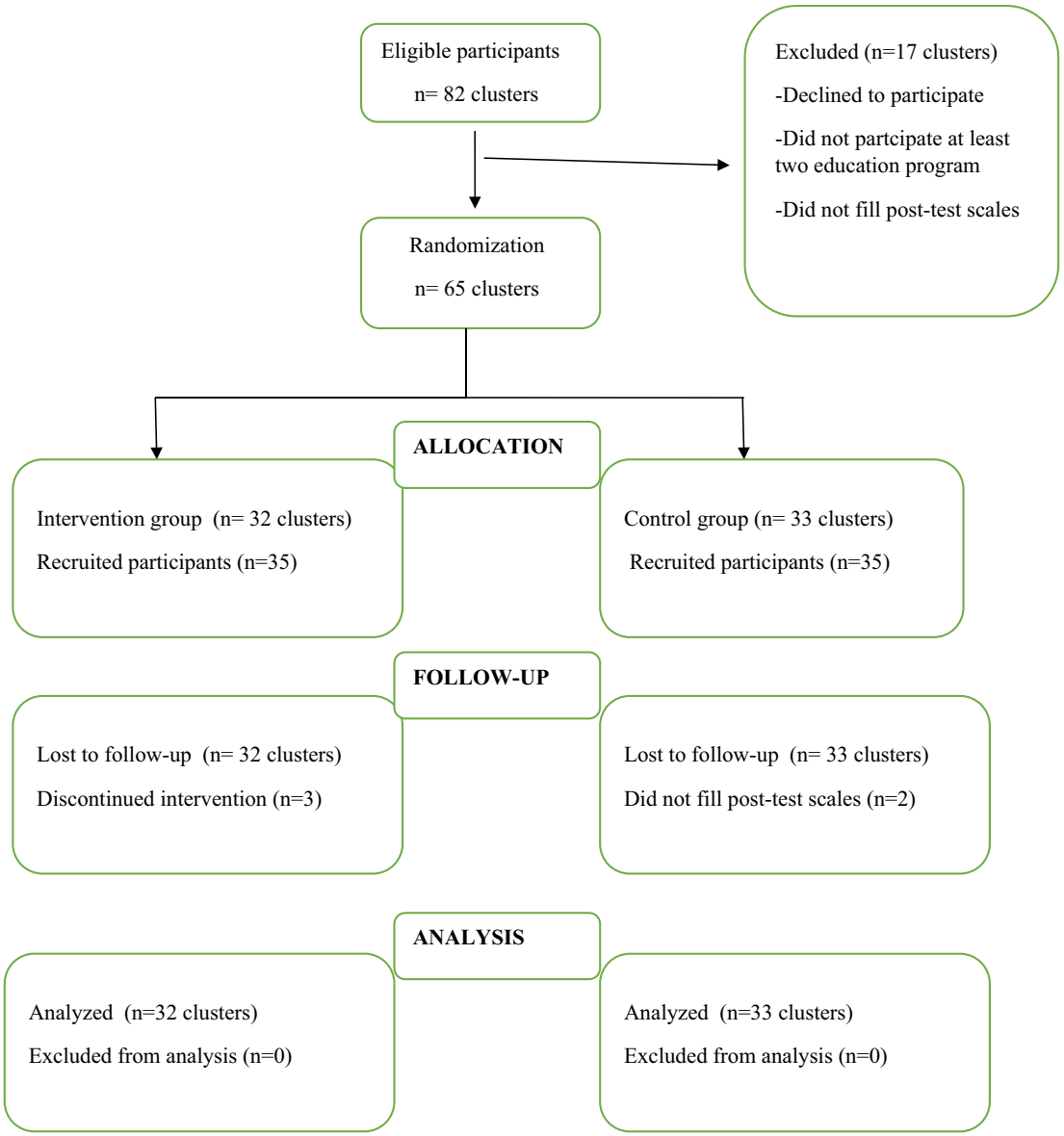

Fig. 1 Consort flow diagram

statements that elicit responses using a five-point Likert scale. In line with the aim of the current study, the Hygiene and Self-care subscale of the scale was applied. The Cronbach's alpha reliability coefficients of Hygiene and Self-care subscale are 0.898 and 0.934. The lowest score that can be obtained from the Hygiene and Self-care subscale is 26; the highest score is 130. It has been stated that as the scores obtained from the scale increase, children's level of hygiene and self-care also increases (Aydos & Tuğrul, 2015).

The Control List for Children's Oral and Dental Health

The Control List consists of 16 questions prepared by researchers and designed in a five-point Likert scale format (strongly agree, agree, undecided, disagree, strongly disagree). This questionnaire has been developed based on the existing literature in order to collect information regarding children's tooth brushing habits after meals, their knowledge of proper tooth brushing techniques, and their regular trips to the dentist. Subsequently, the questionnaire was thoroughly reviewed in consultation with five experts specializing in Pediatric Nursing and Child Development. This process considered content, question order, response options, page layout, and writing format. The experts' input and recommendations were incorporated to enhance the questionnaire. Then, a pilot study was conducted with ten students to assess the clarity of the questions, response time, and overall accessibility. Based on the findings, necessary revisions were

made to refine the questionnaire until arriving at the final version. The questionnaire's scoring system ranges from a minimum score of 16 to a maximum score of 80. As the total score increases, children's oral and dental health skills demonstrate improvement. The Cronbach's Alpha reliability coefficient of the form was determined as 0.821.

Implementation of the Study

Prior to commencing the study, verbal consent was obtained from the children, and written consent was obtained from their parents. The implementation of the study spanned five weeks and took place once a week on Thursdays, following the children's breakfast at school.

Hygiene Education Program Based on Social Learning Theory for Children Age 5–6 Years Old

The program has been prepared based on the concept of modeling derived from "Bandura's Social Learning Theory" (Bandura, 1977). Live models, symbolic models, and verbal directives are used in this education program. One of the researchers served as a live model for personal hygiene practices. Cartoons and animations were used as symbolic models. In order to instruct the desired behavior, the researcher first demonstrated and performed hand washing and tooth brushing practices himself, then had each child practice them. He gave verbal instructions to the children for situations in which they should wash their hands (before and after meals, before and after going to the toilet, after playing in the garden, after touching dirty objects, etc.) and when they should brush their teeth (after meals). On implementation days, the instructor also washed his hands and brushed his teeth in the situations that required those behaviors according to the lessons. The researcher also rewarded the children's correct timing and behavior with verbal feedbacks. The weekly programs are explained in detail below.

Week 1 The scales and forms intended for the pre-test assessment were completed by parents. Afterward, the researchers introduced themselves to the children in the classroom. Two researchers interacted with the children through discussions on personal hygiene topics and engaged in games related to the subject. Additionally, the researchers met with the control group and participated in their regular curricular activities.

Week 2 Personal hygiene education focusing on hand hygiene was provided to the intervention group classes. In this education, the researcher made a PowerPoint presentation. Additionally, an approximately 7-min animated film (https://www.youtube.com/watch?v=QVS9p7EQ9fc) was shown to the children. The film had been previously viewed and approved by experts in the field of Child Health and Disease Nursing and Child Development for its content, language, and suitability for children's cognitive development. Subsequently, the researcher demonstrated proper handwashing techniques to the children and conducted individual handwashing practices with each child. The application with each child lasted approximately 1 min, and the overall duration to manage the entire group was about 30–35 min. No intervention was carried out by the researchers for the control group, and children continued with their routine education as per the curriculum.

Week 3 Personal hygiene (oral/dental health) education was provided to the intervention group classes. In these lessons, the researcher showed a PowerPoint presentation. Additionally, a 4-min and 22-s animated film was shown on the YouTube platform (https://www.youtube.com/watch?v=SctfTsLcygs). The cartoon had been previously viewed and approved by experts in the field of Pediatric Nursing and Child Development for its content, language, and suitability for children's cognitive development. The short film was furthermore approved by the Ministry of Health of the Republic of Turkey. After that, the researcher demonstrated correct tooth brushing techniques using a mouth model. One researcher spent individual sessions with each child to have them first practice on the model and then on their own teeth. Brushing duration (at least 2 min for thorough cleaning of the teeth) was emphasized. The children were encouraged to brush their teeth for approximately 2 min after their breakfast meal at school, and that behavior was observed. The total duration for each child's practice session was about 5 min. No intervention was carried out by the researchers for the control group, and the children continued their routine education as per the curriculum.

Week 4 In the intervention group classrooms, personal hygiene topics were repeated to enhance the sustainability of the education. Children played group games related to the topic, and they similarly engaged in drawing and coloring activities. At this stage, the children's handwashing and oral hygiene behaviors were observed by both their teachers and the researcher. The practice was repeated for children who were not able to perform it correctly. No intervention was made by the researchers in the control group, and the children continued their routine education as determined by the curriculum.

Week 5 The scales and forms determined for the final test measurement were filled out again by the parents of both the intervention and control group children (Fig. 2).

Analysis of Data

Statistical Package for Social Sciences (SPSS) for Windows 25.0 package program was used in the evaluation of the data. The distribution of the data was analyzed with the Shapiro Wilk test. Descriptive statistics of the data were given as

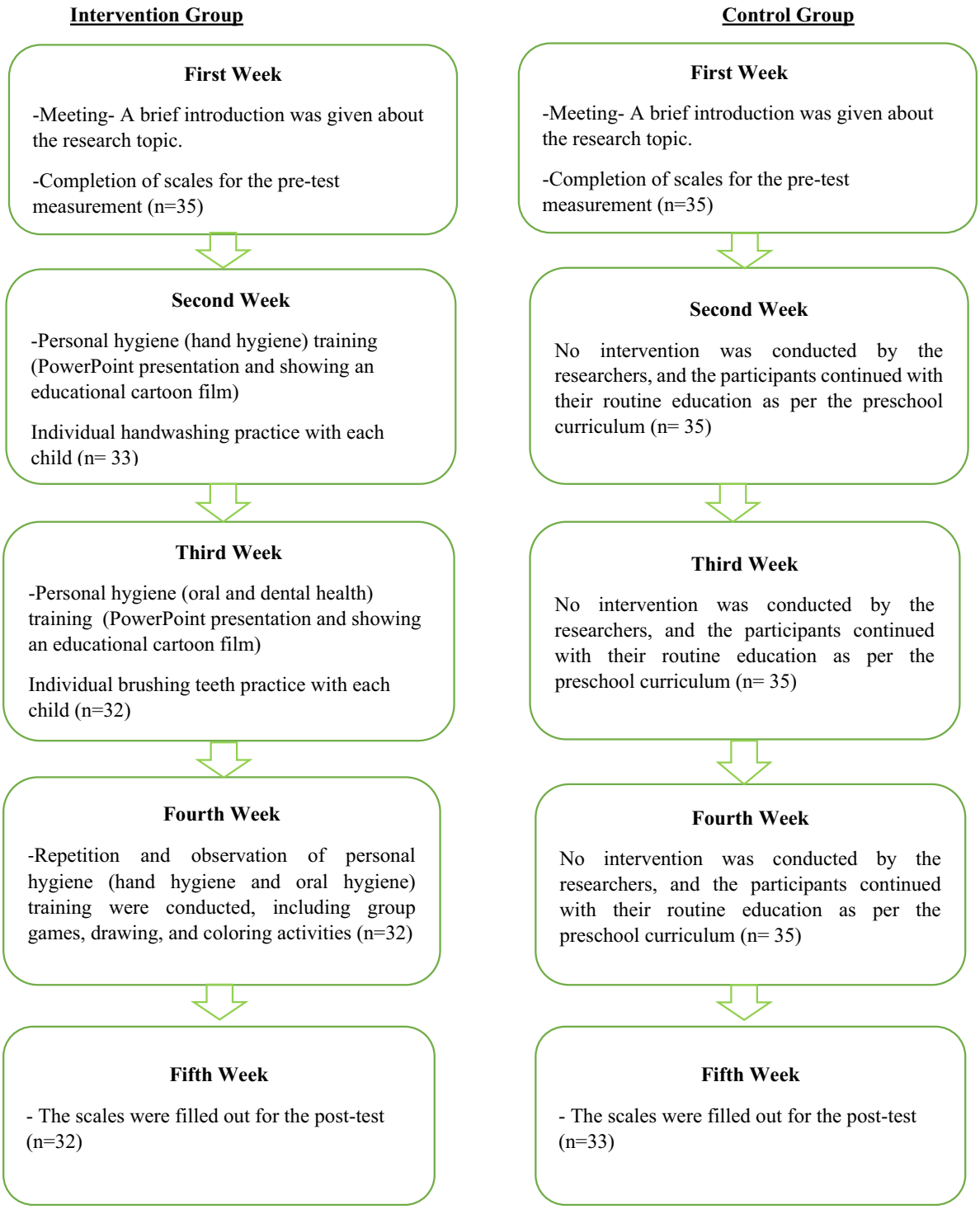

Fig. 2 Research ımplementation flowchart

mean ± standard deviation, minimum–maximum and median values. Descriptive statistics of categorical variables were given as number (n) and percentage (%).

Independent t-test was used to compare the mean scale scores before and after training between the intervention and control groups. The first and second measurements of scale scores were compared using a dependent t-test within the intervention and control groups. For comparisons involving more than two dependent stages, repeated measures ANOVA was used. In case of finding a significant difference,

Bonferroni post hoc test was employed to identify the specific time point(s) that contributed to the difference. Differences between the groups in categorical variables were examined with Pearson Chi-Square Test.

Ethical Aspect of Research

The Ethics Committee of a university (27.02.2023/280049) confirmed the study, and written consent was obtained from all the participants. Necessary written permissions were obtained for the scales used in the research and the cartoons shown during children's training.

Results

The mean age of the children included in the intervention group was 5.36 ± 0.49, and in the control group it was 5.25 ± 0.44. In the intervention group, 56% of the children were female, while in the control group, 39.40% were female. The mean age of mothers in the intervention group was 36.65 ± 4.94; the mean age of fathers was 39.78 ± 6.38. In the intervention group, 53.12% of the mothers were university graduates, while in the control group, 60.0% completed higher education. In the intervention group, 46.87% of fathers were university graduates, while in the control group, 63.63% held a college degree (Table 2).

There was no significant difference found between the mean scores of the groups based on the Oral Dental Health Control Checklist in their first measurements ($p > 0.05$). When examining changes in the mean scores of the Oral Dental Health Control Checklist over time, it was determined that both the control and intervention group children had significant differences between their first and second measurements ($p < 0.05$) (Table 3).

While there was no significant difference found between mean scores of the groups based on the Cleanliness and Self-Care subscale in their first measurements ($p > 0.05$), a significant difference was observed in their second measurements ($p < 0.05$). When examining changes in the mean scores of the Health Scale hygiene subscale over time, it was determined that both control and intervention group children exhibited significant differences between their first and second measurements ($p < 0.05$) (Table 3).

Discussion

Personal hygiene skills are independent life skills established in the early childhood period and should be acquired at an early age. This type of development and skill acquisition can impact children's potential for acceptance in society (Dinçer et al., 2017; Ertem & Ergün, 2018). According to the constructivist approach, preschool children are active in the learning process and new information is integrated into their previous learning (Peköz & Özdemir, 2018). This study aimed to examine the effect of tooth brushing and hand washing training based on an active learning process conceived by social learning theory. Preschool oral and dental health education interventions have the potential to encourage children to establish and maintain effective oral hygiene routines (Bramantoro et al., 2021). Studies have shown that health education provided by role models in the school setting facilitates changes in children's habits and provides them with new knowledge (Iqbal et al., 2022; Wallace Moore, 2021). These role models can typically be teachers, school nurses, or health professionals. Health education may cover topics such as proper nutrition, hygiene, and physical activity. These instructions can help children improve their health behaviors (Kearney & Levine, 2020; Tyndall & Lynam, 2017). In a study examining the effect of an oral health education program on preschoolers, it is stated that educational interventions can have a positive influence on improving tooth brushing habits and oral health outcomes (Shaghaghian et al., 2018). In a randomized controlled trial conducted in preschools in Germany, children's tooth brushing behaviors showed a high success rate in following the correct brushing steps after receiving specific education on those techniques (Deinzer et al., 2019). Research studies show an increase in tooth brushing frequency and improvement in tooth brushing skills among children as a result of proper training provided by individuals they perceive as role models (Iqbal et al., 2022). These educational interventions often incorporate the use of digital technologies (Aljafari et al., 2020; Choi et al., 2019; Melo et al., 2018).

These research findings overlap with the results of our experiment. However, in this study, while one of these models was already partially included in the actual curriculum, the use of three different models based on social learning (live, symbolic, and verbal) may have had an effect on the results. In other words, although the control group did indeed receive training as part of the standard curriculum, the better skill development in the research group may be due to the inclusion of the three models. The importance of establishing regular tooth brushing habits from an early age can be emphasized, and topics such as correct tooth brushing techniques, proper toothbrush and toothpaste selection can be taught. Additionally, observing children's tooth brushing behaviors during the education sessions and providing feedback can have a significant impact. Tooth brushing education based on social learning theory can be especially effective by encouraging children to imitate models around them. In this way, it is believed that contributions can be made to improve children's oral health behaviors and develop dental hygiene habits.

Table 2 Socio-demographic characteristics of children and their parents (intervention group = 32; control group = 33)

	$\underline{X} \pm$ SD	Min.–max
Age		
Intervention	5.36 ± .49	5–6
Control	5.25 ± .44	5–6
	f	%
Gender		
Intervention		
Female	18	56.25
Male	14	43.75
Control		
Female	13	39.40
Male	20	60.60
Mother's age		
Intervention	36.65 ± 4.94	25–46
Control	34.06 ± 4.27	26–44
Father's age		
Intervention	39.78 ± 6.38	27–50
Control	36.78 ± 4.40	25–47
Mother's education		
Intervention		
Primary school	6	18.75
High school	9	28.12
University	17	53.12
Control		
Primary school	2	6.07
High school	11	33.33
University	20	60.60
Father's education		
Intervention		
Primary school	8	25
High school	9	28.13
University	15	46.87
Control		
Primary school	3	9.10
High school	9	27.27
University	21	63.63

We determined that there was no significant difference in the mean scores of the "Hygiene and Self-care Subscale" of the Pre-school Children's Health Education Scale between the groups after the first measurements. However, there was a significant difference in the second measurements. When examining the changes in the mean scores of the hygiene subscale over time for children, significant differences were found between the first and second measurements in both the intervention and control groups. In a study evaluating the effectiveness of a handwashing education program conducted using role-play method for preschool children, it was reported that the hand washing program was an effective intervention that led to preschoolers increasing the frequency and accuracy of their hand washing (Lim & Kwon, 2019). In a study examining the impact of a hand hygiene intervention program on kindergarten children in South Korea, it was reported that the hand hygiene education provided to children resulted in increased hand washing frequency and reduced incidence of infections (Lee et al., 2019). Other researchers have demonstrated that preschool children's engagement with digital technologies such as computer games, videos, and video cameras can be effective in enhancing and monitoring handwashing behaviors, self-efficacy, and hygiene knowledge in educational settings.

Table 3 Distribution of mean scores for the "Oral and Dental Health Control List" and the "Health Education Scale for Preschool Children–Hygiene Subscale" in the intervention and control groups (n = 65)

Scale	Group (n)	Pre-test $\underline{X} \pm SD$	Post-test $\underline{X} \pm SD$	Z	p^2
Oral health checklist	Intervention (32)	30.28 ± 7.26	33.15 ± 6.82	− 3.231*	0.001*
	Control (33)	28.51 ± 6.22	30.60 ± 4.95	− 2.489*	0.013*
t-test		1.054	1.728		
p^1		0.296	0.089		
Hygiene and self-care scale	Intervention (32)	52.62 ± 3.53	58.50 ± 0.567	− 4.708*	0.001*
	Control (33)	52.96 ± 5.75	56.09 ± 4.42	− 3.270*	0.001*
t-test		− 0.290	3.054*		
p^1		0.773*	0.003*		

p1: Independent samples t-test significance value; p2: Wilcoxon test significance value = *p < 0.05; $\underline{X}$: Mean; *SD* standard deviation

It is believed that children's exposure to role models in these technologies influences their behavior positively (Mendes et al., 2020; Suen & Cheung, 2020). Suen and Cheung (2020), for instance, evaluated the effectiveness of a four-week educational program for preschool children in increasing their knowledge and promoting hand hygiene practices. They reported that the intervention group showed a higher level of knowledge and significant improvements in hand hygiene performance compared to the control group. In an experiment that examined the effects of an interactive education program including stories, songs, games, and practical hand washing activities for Hungarian kindergarteners, it was reported that after implementation, the children's hand washing frequency significantly increased, and became more regular. That study indicated the effect of the education program was statistically significant (Rashed, 2019). When examining the literature, it is possible to come across reports of improved hand washing knowledge, skills, and frequency among preschool children as a result of hand hygiene education. These studies also indicate a decrease in infectious diseases such as hand, foot, and mouth disease, as well as a reduction in rates of absenteeism (Dangis et al., 2023; De Jesus, 2020; Fung et al., 2018; Guo et al., 2018; Liu et al., 2019; Or et al., 2020; Rabie et al., 2017; Wu et al., 2022). In our study, although books and educational practices were utilized for the control group to acquire appropriate hand hygiene skills within the scope of Turkish pre-school education, positive results may have been obtained in favor of the intervention group by using three different types of models that can be used in social learning theory.

Hand hygiene education provided to preschool children teaches them the importance of hand washing and how to do it correctly. Through these programs, children become aware of hand washing and acquire the necessary skills. The education is based on social learning theory and involves creating models for children to follow. Demonstration of proper handwashing behaviors by teachers or other adults helps children imitate and adopt best practices. Practical experiences and repetitions are often included in hand hygiene education. Children are given the opportunity to practice hand washing skills and encouraged to repeat them. Such experiences help to reinforce good habits and encourage frequent practice. Children learn that hand washing prevents the spread of infectious diseases and is an important health behavior. This awareness leads to an increase in their hand washing habits and adoption of an overall hygienic mindset. Therefore, we believe our research findings align with similar studies in the literature.

Conclusion

Through systematic and effective implementation of preschool education, a child's existing skills in all developmental domains improve positively, and new skills are added. Personal hygiene skills, which are encouraged both at home and at school, include observable behaviors that reflect development in all domains.

Like any other skill, personal hygiene skills can only become permanent through practice. Therefore, opportunities should be created for children in educational institutions and home environments. These opportunities should include not only physical arrangements but also activities based on social learning. Such activities, which are structured with various learning models that are effective in preschool children, may positively instill hygiene awareness and foment the habit.

The literature emphasizes the importance of training for hand hygiene and oral health in preschool-aged children. Instilling hand washing and tooth brushing habits at an early age not only helps improve personal hygiene but also prevents the spread of infectious diseases. Therefore, it is important to promote collaborative hygiene education programs between schools and families.

Research findings indicate that various methods, such as learning through observation, role modeling, and imitation,

based on foundational principles of social learning theory, can be employed to instill positive behaviors in preschoolers. Educators and policymakers can enhance interventions aimed at developing personal hygiene skills in children by integrating the role of observational learning and modeling into the curriculum. This integration allows for cost-effective, time-efficient, and maximally effective utilization of workforce resources. What is more, children can engage in the learning process while having fun.

The significant increase in hand washing and oral dental health scores in the intervention group indicates the effectiveness of applied education. These results provide insights for future research on the importance of practical and experiential learning methods in preschool settings.

Early intervention programs play a crucial role instilling personal hygiene habits. Educators and health professionals transforming personal hygiene education into a routine in early childhood programs can establish the foundation for healthy behaviors in adulthood. Further research can be conducted to explore the characteristics of effective role models and how they influence children's learning and behaviors.

Educators working in preschool settings can benefit from in-service training programs that provide effective strategies for teaching personal hygiene and being positive role models. This may involve integrating interactive and practical activities into daily routines.

Research and Practice Implications

Research findings indicate that various methods, such as learning through observation, role modeling, and imitation, based on the foundational principles of social learning theory, can be employed to instill positive behaviors in young children. Educators and policymakers can enhance such interventions by integrating the role of observational learning and modeling into the curriculum. This integration allows for a cost-effective, time-efficient, and maximally effective utilization of workforce resources. The ideal is for children to engage in the learning process while having fun.

The significant increase in hand washing and oral dental health scores in the intervention group indicates the effectiveness of applied education in promoting personal hygiene. These results provide insights for future research on the importance of practical and experiential learning methods in preschool settings.

Early intervention programs play a crucial role in instilling personal hygiene habits. Educators and health professionals transforming personal hygiene education into a routine in early childhood programs can establish the foundation for healthy behaviors in adulthood. Further research can be conducted to explore the characteristics of effective role models and how they influence children's learning and behaviors.

Creating age and developmentally appropriate resources and materials can enhance the effectiveness of preschool education programs. These resources may include visual materials, games, and digital technologies that engage children in the learning process.

Limitations and Recommendations for Future Study

The present study has several limitations that should be acknowledged. First, although hygiene is not always a purely personal matter, the impact of sociocultural, familial, and non-familial aspects of hygiene on research outcomes was not assessed. Second, the present findings may not be generally applicable to populations with different sociodemographic characteristics. Thus, further research on the subject and the synthesis of findings from studies conducted on different populations are recommended. Thus, a more precise and reliable evaluation of the effectiveness of hygiene education provided to preschool children can be conducted. The results of each study may demonstrate different levels of impact, and the methods, sample sizes, and other variables of the study can influence the results. Therefore, conducting more experiments and synthesizing different results are important factors for improving these pedagogical aims.

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