



Increasing the Awareness of Pediatric Nurses about the Protection and Continuity of the Oral and Dental Health of Children

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Research Article

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ABSTRACT

Objectives: To provide pediatric nurses with knowledge and skills on oral and dental health and to increase their awareness.

Materials and Methods: In the first phase of the study, pre-tests were given to pediatric nurses in Trabzon and Rize central and district hospitals. A Whatsapp group was created with the nurses who completed the tests, and the training video prepared by the researcher was shared. In the second phase of the study, the same questions were applied again as the post-test. The Shapiro-Wilk test was performed to detect normality. Jamovi (Version 1.0.4) software was used for statistical analysis. Owing to a non-normal distribution, a Wilcoxon Rank statistical analysis was conducted to examine the differences between pretest and posttest scores. The Kruskal-Wallis analysis was conducted to determine the relationship between dependent and independent parameters. The probability level for statistical significance was set at $p = 0.05$.

Results: Of the 91 nurses who completed both the pre-test and the post-test, 83 (91.2%) were female and 8 (8.8%) were male. In all sections in the test category consisting of six different sections (Tooth Decay, Risk Factors in Dental Caries, Prevention of Dental Caries, Oral and Dental Injuries, Children with Special Care Needs, What to Do - How to do?), the success rate was significantly higher in the post-test ($p < 0.001$).

Conclusions: Research emphasizes that neonatal nurses, pediatric nurses and health professionals working in community health centers should be activated and empowered in order to prevent oral and dental health problems of children, and awareness should be increased with scientifically valid educational guidelines. The results of the present study support these views and emphasize the importance of education by showing significant improvement with the training provided to nurses who had insufficient knowledge and awareness about the subject.

Keywords: Pediatric Service Nurses, Pediatric Patients, Oral and Dental Health, Awareness, Education.

Pediatric Servis Hemşirelerinin, Çocukların Ağız Dış Sağlığının Korunması ve Devamlılığının Sağlanması Hakkında Farkındalıklarının Artırılması

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Öz

Amaç: Pediatri hemşirelerine ağız ve diş sağlığı konusundaki bilgi ve beceriyi kazandırmak ve onların farkındalıklarını artırmaktır.

Gereç ve Yöntemler: Araştırmanın birinci aşamasında, Trabzon ve Rize merkez ve ilçe hastanelerindeki pediatri servisi hemşirelerine ön test soruları verildi. Testi cevaplayan hemşirelerle oluşturulan Whatsapp grubunda, tarafınca hazırlanan eğitim videosu paylaşıldı. İkinci aşamada; ön test sorularının aynısı, son test olarak tekrar uygulandı. İstatistiksel analiz için Jamovi (Sürüm 1.0.4) yazılımı kullanıldı. Normal olmayan bir dağılım nedeniyle, ön test ve son test puanları arasındaki farkları incelemek için bir Wilcoxon Rank istatistiksel analizi yapılmıştır. Bağımlı ve bağımsız parametreler arasındaki ilişkiyi belirlemek için Kruskal-Wallis analizi yapıldı. İstatistiksel anlamlılık için olasılık seviyesi $p = 0.05$ olarak ayarlandı.

Bulgular: Hem ön test hem de son testi cevaplayan 91 hemşirenin 83' ü (91,2%) kadın, 8'i (8,8%) erkekti. Altı farklı bölümden oluşan test kategorisindeki tüm bölümlerde (Diş Çürüğü, Diş Çürüklerinde Risk Faktörleri, Diş Çürüğünün Önlenmesi, Ağız ve Diş Yaralanmaları, Özel Bakım İhtiyacı Olan Çocuklar, Ne Yapmalı - Nasıl Yapılır?) eğitim sonrası yapılan son testteki başarı oranı anlamlı ölçüde artmıştı ($p < 0,001$).

Sonuçlar: Araştırmalar; çocukların ağız ve diş sağlığı sorunlarının önüne geçilmesi amacı ile; yeni doğan hemşireleri, çocuk hemşireleri ve toplum sağlığı merkezlerinde çalışan sağlık profesyonelleri dinamiklerinin harekete geçirilmesi gerektiğini vurgulamakta ve bu konuda bilimsel geçerliliği olan eğitim rehberleri ile farkındalık bilincini desteklemektedir. Çalışma sonuçlarımız bu görüşleri destekler nitelikte olup, konu hakkında yetersiz bilgi ve farkındalığı olan hemşirelere verdiğimiz eğitim ile birlikte anlamlı iyileşmeyi göstererek eğitimin önemini vurgulamaktadır.

Anahtar Kelimeler: Pediatri servisi hemşireleri, Çocuk hastalar, Ağız ve Diş Sağlığı, Farkındalık, Eğiti.

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Introduction

Worldwide, the most common chronic disease affecting children's health is dental caries, which remains a serious problem, particularly in low-income populations.^{1,2} The prevalence of dental caries is high in children of certain ethnic or racial groups, particularly those who live in areas with limited access to dentist.³ Some of the factors that contribute to the progression of dental caries include low socio-economic level, limited access to dental care, and a lack of guidance regarding expectations. Studies emphasize that newborn nurses, pediatric nurses, and health professionals working in public health centers should play a key role in preventing oral and dental health problems in children, and awareness should be raised through scientifically valid education guides on the subject.^{4,5} On the contrary, studies have shown that nurses receive inadequate training in oral and dental health care and have insufficient knowledge in this area.^{1,6} However, nurses constitute a large part of the health professions and play an important role in primary health care. Although the importance of healthcare professionals in systemic health is widely recognized, their role in oral health care is often overlooked.^{7,8} Awareness and knowledge of dentistry is still insufficient among many patients and healthcare professionals.⁹

Sharing responsibility for children's oral health with primary health care providers creates opportunities for joint initiatives in target populations that are at high risk for other health and social problems. Therefore, oral recommendations for preventive measures in general health check-ups using an approach that considers common health determinants are quite productive.¹⁰ A comprehensive collaborative approach to this issue requires professional cooperation.^{10,11} Comprehensive approaches are certainly becoming more important and effective in less developed public dental services and healthcare systems; for example, involving vaccination staff in public health centers to provide oral health instructions to parents has been successful in reducing caries in young children.¹²

Oral and dental health is an important component of general health. Oral and dental health should not be ignored in children who are hospitalized or receiving treatment in order for them to regain their overall health; therefore, nurses' knowledge and skills in dental and oral health should be increased.^{12,13} There are studies in the literature that assess pediatric nurses' oral health habits, oral and dental health knowledge, and pediatric oral health knowledge, but there are no studies that compare pediatric oral health knowledge among nurses before and after comprehensive training. The aim of this study was to provide pediatric nurses with the knowledge and skills needed for oral and dental health and to increase their awareness of this issue. It will be possible to avoid difficult and expensive dental treatments by allowing pediatric nurses to identify and prevent oral and dental health problems that may occur during certain stages of the child's life as well as by increasing parental awareness of this issue. When all of these factors are socially

disseminated throughout Turkey, it will be possible to monitor oral health in a professional capacity starting from the first years of life.

Materials and Methods

Type of Research

This research was conducted using the "Single Group Pretest–Posttest Model," which is one of the quasi-experimental research methods.¹⁴

Location and Characteristics of the Research

The research was conducted in central and district state hospitals in Trabzon (Karadeniz Technical University Health Practice and Research Center [Farabi Hospital], Arakli Bayram Halil State Hospital, Akçaabat Hackalı Baba State Hospital, S.B.U. Kanuni Training and Research Hospital, Of State Hospital, Sürmene State Hospital, Vakfikebir State Hospital) and Rize (Recep Tayyip Erdoğan University Training and Research Hospital, İshakoğlu Çayeli State Hospital). All of these hospitals, which are secondary and tertiary care facilities, have an inpatient pediatric unit and nurses who work in it. The working hours of the nurses were 08.00–16.00 and 16.00–08.00, with more than one nurse on duty during the 16.00–08.00 shift.

Population and Sample of the Research

The study population consisted of 91 nurses working in the pediatric services of Trabzon and Rize central and district hospitals between 01/03/2019 and 31/12/2019.

To determine the sample size, a pilot study was conducted with five nurses who met the research criteria over a 1-month period (from 01.01.2019 to 01.02.2019). Based on this pilot study, sample size and power were calculated using the G*Power software (G*Power, Ver. 3.0.10, Universität Kiel, Germany, <http://www.psych.uniduesseldorf.de/aap/projects/gpower/>). With power = 95%, type 1 error $\alpha = 0.05$, and type 2 error $\beta = 0.05$, the minimum number of individuals required to determine the difference between pre- and post-training test results at $d_z = 0.75$ effect width was determined as 26. Considering the possible dropouts during and after the training, the sample size was increased by 20% ($n = 6$). According to these results, the total sample size was calculated to be 32 individuals. The study sample consisted of 91 nurses who agreed to participate in the study between 01/03/2019 and 31/12/2019 and met the inclusion criteria.

Ethical Considerations

Ethical approval was obtained from Recep Tayyip Erdogan University, Faculty of Medicine, Non-Interventional Ethics Committee, with decision number 2019/39. Necessary permission from Trabzon and Rize central and district hospitals, which have inpatient pediatric services, was obtained from the health directorates of the provinces, and approval was obtained from the head physician of each district hospital.

Preparation of Educational Materials

Training material was obtained by requesting the "Open Wide: Oral Health Training for Health Professionals" and "Health Professional's Guide to Pediatric Oral Health Management"¹⁵ training modules from Georgetown University National Maternal and Child Oral Health Resource Center, and these modules were translated into Turkish. The material consists of six different modules. Module 1: Dental Caries, Module 2: Risk Factors for Dental Caries, Module 3: Prevention of Caries, Module 4: Oral and Dental Injuries, Module 5: Children with Special Care Needs, and Module 6: What to do and How?

The researcher created the training video, which was prepared through verbal and visual narration, and recorded the contents in the training booklet.

Data Collection

The researcher prepared pretest and posttest questionnaires to collect research data. The questionnaire included questions on the sociodemographic characteristics of the nurse and information about the modules in the training booklet. The content of the module was obtained by a professional translator translated into Turkish by a professional translator of the end-of-module questions in the training modules "Open Wide: Oral Health Education for Health Professionals" and "A Health Professional's Guide to Pediatric Oral Health Management" requested from Georgetown University National Maternal and Child Oral Health Resource Center. A total of 37 questions were divided into six different categories. The distribution of the questions in each category is shown in Table 1.

The posttest was administered 1 month after the training according to the principles of adult education. The pretest and posttest were administered to the caregivers by the researcher during face-to-face interviews. Before starting the training, nurses were informed about the questionnaire, and then the pretest was administered. The training booklet was given to the nurses immediately after the pretest. In the same session, the training video was sent to the nurses via Whatsapp, allowing nurses working at a busy tempo to watch the video and read the booklet. One month after the training, the questionnaire form was administered again as the posttest.

Each correct answer was given a score of "1," and each incorrect answer was given a score of "0." The total score ranged from 0 to 37 points.

Statistical Analysis

The Jamovi (Version 1.0.4) software was used for statistical analysis. A descriptive analysis of the study population's demographic attributes was conducted. The Shapiro-Wilk test was performed to detect normality. Owing to a non-normal distribution, a Wilcoxon Rank statistical analysis was conducted to examine the differences between pretest and posttest scores. The Kruskal-Wallis analysis was conducted to determine the relationship between dependent and independent parameters. The probability level for statistical significance was set at $p=0.05$.

Results

Of the nurses participating in the study, 91.2% were females ($n = 83$) and 8.8% were males ($n = 8$). The mean age of the participants was 35.4 ± 7.2 years. The demographic characteristics of the nurses are shown in Table 1.

In all modules of the training booklet, a statistically significant difference was found between the pretest and posttest scores ($p < 0.001$) (Table 2) (Figure 1).

The statistical relationship between nurses' sociodemographic characteristics and pretest and posttest scores is shown in Table 3.

Discussion

Pediatric nurses, pediatricians, and other healthcare professionals who deal with children are far more likely than dentists to encounter pre-school children who need preventive oral measures. Therefore, non-dental health professionals should be trained to identify risk factors for early childhood caries and other oral health problems as well as to make appropriate decisions about timely and effective intervention and referrals.² Hallas et al.² stated that pediatric nurses in primary care received postgraduate education through the doctoral program recommended by the American College of Nurses¹⁶ until 2015. The core curriculum was published by the Programs of the Association of Child Health and Diseases Nursing Faculties, which covered oral health topics in a broad framework.¹⁷ These topics cover evaluation of the oral cavity, including primary and permanent dentition; recommendations suggesting a first dentist visit; common oral health problems, such as recognizing malocclusions, cavities, and dental injuries; recommendations for brushing and oral hygiene; advice on the use of pacifiers and bottles and the prevention of dental problems; focusing on children's oral health needs and dental hygiene; and oral and dental health issues for children with special needs such as cleft palate. An integral part of this curriculum is the management of clinical practice by nurses. In this sense, the primary emphasis is on the development of expertise in physical assessment skills, including oral cavity examination and evaluation.^{2,17} To the best of our knowledge, no education curriculum in undergraduate and graduate programs of pediatric nurses in Turkey addresses both theoretical and practical issues related to oral and dental health.

Several publications have emphasized the importance of pediatric nurses' knowledge of children's oral health problems.^{2,18,19} Sohn et al.²⁰ stated that before developing detailed educational strategies for nursing students, the lack of knowledge about oral health should be clearly addressed. Although Pesaresi et al.²¹ reported similar results, they stated that knowledge and awareness of "recognizing caries lesions" and "protecting from caries" are especially low. Pediatric nurses' lack of basic knowledge of oral health care for children has been associated with a lack of training in oral and dental health during continuous education¹⁸⁻²¹.

Kressin *et al.*²² gave pediatricians and clinical nurses a 1-hour training on early childhood caries (ECC) and stated that correct answers about ECC increased from 66% to 79% after the training program. Tüzüner *et al.*¹⁹ conducted a study in Turkey where they taught senior nursing students about the oral and dental health of newborns and infants and stated that the correct answers in the posttest increased significantly compared to the pretest. Kahrیمان *et al.*¹⁸ evaluated pediatric nurses' knowledge of the oral and dental health of newborns and infants and found that nurses' knowledge level was low. They found that this was associated with education level, years of professional work, and whether the nurses had received previous oral and dental health education. In the same study, most nurses (88.7%) stated that they did not receive professional training on the oral and dental health of newborns and children. In the present study, 86.8% of pediatric nurses stated that they had not received any training on oral and dental health, which is consistent with the result of Kahrیمان *et al.*¹⁸ The correct answers given in the pretest by 13.2% of nurses who had received training before being introduced to the "Risk factors in prevention of caries" module were significantly higher than those who had not received any training. According to the literature, education level is a significant factor, but professional experience does not significantly affect knowledge.²³ Perassi *et al.*²¹ also stated that there is no significant relationship between knowledge, socio-economic status, and years of professional experience. In the present study, no significant difference was found between the pretest and posttest in terms of education level. Kahrیمان *et al.*¹⁸ found that increasing knowledge with increasing education levels and years of vocational training was associated with better experience and awareness of nurses.

Consistent with other studies, in the present study, the number of correct answers in the pretest was significantly lower in all modules compared to the posttest. The answers given to the risk factors module in the pretest revealed a significant difference in terms of age, gender, and whether the nurses had previously received oral and dental health education. In terms of age, there was also a significant difference in the 3 and 6 modules of the pretest.

The study's training modules included not only dental caries but also oral and dental injuries, children with special care needs, and what to do these cases. Different experts in the field developed and standardized English-Turkish and

Turkish-English translations of these training modules. Quasi-experimental research designs examine causal hypotheses and changes in outcomes before and after an intervention.¹⁴ A pretest and posttest on pediatric ward nurses were used to assess the effectiveness of these standardized training modules. The posttest results showed that these standard training modules are effective, as evidenced by an increase in pediatric ward nurses' level of knowledge and awareness of children' oral and dental health. As a result, applying this comprehensive education model to wider audiences in the future will be beneficial.

There are certain limitations to this study. Quasi-experimental research methods are often used when it is not possible to divide individuals or groups into treatment and control groups.¹⁴ A lack of randomization in pediatric ward nurses, a small sample size, and a lack of long-term test results and motivation to follow-up are other limitations of the study. These issues should be addressed in future studies on this subject. We believe that there is a need for additional research utilizing a multidisciplinary approach in the process of integrating oral and dental health into secondary and tertiary health services.

Conclusions

According to the results of the present study, standardized training programs can be used effectively to increase pediatric nurses' knowledge of children's oral and dental health. Developing appropriate health policies and incorporating oral and dental health education into nursing curricula will play an important role in raising awareness of both preventive and curative dental care among pediatric nurses who provide close care to children in secondary and tertiary health institutions.

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Conflicts of Interest statement

There is no conflict of interest

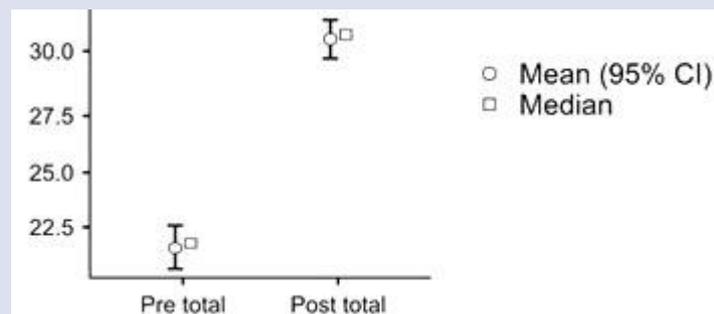


Figure1. Mean and median values of total correct answers in pretest and posttest

Table 1. Descriptive analysis of the demographic characteristics of pediatric nurses

		Total (N=91)
Age		
Mean (SD)		35.4 (7.2)
Range		20.0 - 47.0
Gender		
Male		8 (8.8%)
Female		83 (91.2%)
Marital status		
Single		67 (73.6%)
Married		24 (26.4%)
Education level		
High school		6 (6.6%)
University		85 (93.4%)
Professional experience		
Mean (SD)		13.5 (7.7)
Range		1.0 - 29.0
Have you received any training on oral and dental health?		
Yes		12 (13.2%)
No		79 (86.8%)

Table 2. Differences of pre and post scores according to training patterns (Wilcoxon Rank Statistical Analysis)

Training Modules	p	Mean difference	SE difference	95% Confidence Interval	
				Lower	Upper
Mod 1	< .001	-1.5	0.15	-2	-1.5
Mod 2	< .001	-1.5	0.15	-1.5	-1
Mod 3	< .001	-1.5	0.13	-1.5	-1
Mod 4	< .001	-3	0.22	-3.5	-3
Mod 5	< .001	-1.5	0.11	-2	-1.5
Mod 6	< .001	-1.5	0.13	-2	-1.5
Total	< .001	-9	0.52	-10	-8

Table 3. Presentation of Kruskal-Wallis Analysis that tested the relationship between dependent factors and scores.

	Age range			Gender			Have you received oral health education before?					
	<39	>38	p	Female	Male	p	High Sch.	Univ	p	Yes	No	p-
Pre test-	4	4	0.208	3,5	4	0.537	3	4 (0-6)	0.584	4,5	4 (2-6)	0.692
Mod 1	(2-6)	(0-6)		(2-6)	(0-6)		(2-6)			(0-6)		
Pre test-	5	4	0.011*	3	5	0.015*	5	5 (0-6)	0.767	5 (0-6)	5 (1-6)	0.007*
Mod 2	(1-6)	(0-6)		(3-5)	(0-6)		(3-6)					
Pre test-	3	2,5	0.004*	3	3	0.590	2	3 (0-6)	0.539	3 (1-6)	3 (0-5)	0.625
Mod 3	(1-6)	(0-5)		(1-5)	(0-6)		(1-5)					
Pre test-	5 (1-	5	0.175	2,5	5	0.083	5	5	0.198	5,5	5	0.250
Mod 4	10)	(0-7)		(2-7)	(0-10)		(2-8)	(0-10)		(1-10)	(0-10)	
Pre test-	2	3	0.291	3	3	0.582	3	3 (0-4)	0.065	2,5	3 (0-4)	0.825
Mod 5	(0-4)	(0-4)		(0-4)	(0-4)		(2-4)			(1-4)		
Pre test-	4	3	< .001*	3	3	0.733	3	3 (0-5)	0.304	3 (0-5)	3 (0-5)	0.799
Mod 6	(0-5)	(0-5)		(0-5)	(0-5)		(1-4)					
Pre test-	23	20,5	0.002*	17,5	22	0.114	21	22,5 (6-	0.540	24	22	0.194
Total	(14-34)	(6-28)		(14-29)	(6-34)		(15-29)	34)		(6-34)	(6-33)	
Post test-	6	5	0.868	6	5	0.029*	5	5,5	0.315	5 (4-6)	6 (2-6)	0.538
Mod 1	(3-6)	(2-6)		(5-6)	(2-6)		(4-6)	(2-6)				
Post test-	5	6	< .001*	5	5	0.828	5	6 (4-6)	0.060	5 (4-6)	6 (4-6)	0.388
Mod 2	(4-6)	(4-6)		(5-6)	(4-6)		(4-6)					
Post test-	5	4	0.328	4,5	4	0.376	5	4 (2-6)	0.200	4 (3-6)	4 (2-6)	0.761
Mod 3	(3-6)	(2-6)		(3-6)	(2-6)		(4-6)					
Post test-	8 (3-	8 (5-	0.037*	8	8	0.055	8	8	0.198	8	8	0.954
Mod 4	10)	10)		(8-10)	(3-10)		(6-9)	(5-10)		(5-10)	(3-10)	
Post test-	4	4	0.156	4	4	0.531	4	4 (1-5)	0.912	4 (4-4)	4 (1-5)	0.150
Mod 5	(1-5)	(3-4)		(3-4)	(1-5)		(3-4)					
Post test-	5	4,5	0.130	4,5	5	0.831	5	5 (1-5)	0.685	5 (3-5)	5 (1-5)	0.761
Mod 6	(2-5)	(1-5)		(3-5)	(1-5)		(3-5)					
Post test-	31	31,5	0.594	32	31	0.083	31	31	0.240	31,5	31 (21-	0.863
Total	(22-35)	(21-35)		(29-35)	(21-35)		(29-35)	(21-35)		(25-34)	35)	

Median (Min-max), * indicates significance (p<0.05)

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