

Evaluation of Pediatric Dentistry Postgraduate Education in Turkey by Specialty Students

Türkiye'deki Pedodonti Lisansüstü Eğitiminin Uzmanlık Öğrencileri Tarafından Değerlendirilmesi

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ABSTRACT

Aim: The aim of our study is to evaluate the thoughts of speciality students receiving pediatric dentistry education in different faculties in Turkey about pediatric dentistry education by guiding them through survey questions prepared considering the curriculum.

Material and Method: Questions prepared in accordance with the core curriculum of pediatric dentistry education published in 2021 were sent to specialisation students studying at different universities in Turkey via Google Forms. A total of 92 surveys were collected, and the responses were statistically analysed.

Result: Mostly "sufficient" responses were obtained to the questions related to the content of pediatric dentistry education. It was determined that most of the participants did not participate in scientific research. When participants were asked which topics they were most proficient in theoretically within the pediatric dentistry curriculum, the topics selected the least were, respectively, dental treatments under sedation, odontogenic infections and surgical treatment approaches, and minor orthodontic treatment applications. When asked which clinical treatment applications they performed, the least selected topics were, respectively, dental treatments under sedation, zirconium crown applications, and permanent tooth extractions.

Conclusion: Overall, when the responses are evaluated, it can be concluded that the pediatric dentistry education process and content in Turkey are conducted in accordance with the curriculum, but it is necessary to encourage the participation of specialisation students in academic studies. The content of pediatric dentistry education and clinical practices in Turkey should be evaluated in detail with new studies, and efforts should be made to improve the content of pediatric dentistry education, focusing on areas perceived as lacking.

Keyword: Survey, Pedodontics, Curriculum.

Introduction

Pediatric dentistry is a speciality that focusses on the treatment planning of children and adolescents, including those with special needs (disabled or with systemic diseases), according to their growth and development stages. It encompasses behaviour management and provides all diagnostic, investigative, and therapeutic dental procedures. Previously, in Turkey, it was combined under the department of "Pedodontics and Orthodontics," but it was separated into "Pedodontics" as a distinct department following the new regulation published on June 19, 2002.¹ Since the introduction of the Dental Specialisation Exam (DUS) in 2012, Turkey has continued to provide pediatric dentistry education through speciality education.

According to the 2022 data from Turkey Health Research, dental and oral health issues are reported as the 5th most common disease in the 0-6 age group and the 3rd most common in the 7-14 age group in Turkey.² The high prevalence of oral and dental health problems among children increases the need for pediatric dentists (pedodontist). It is evident that for equipped pedodontist to serve in every region of Turkey, the pediatric dentistry education received at various faculties must align with the core curriculum and educational objectives. The curriculum created by the Medical Specialisation Board Curriculum Development and Standards Determination System (TUKMOS) in 2021 includes

ÖZ

Amaç: Türkiye'deki farklı fakültelerde pedodonti eğitimi alan uzmanlık öğrencilerinin, müfredat dikkate alınarak hazırlanan anket soruları aracılığıyla pedodonti eğitimi hakkındaki düşüncelerini değerlendirmektir.

Gereç ve Yöntemler: 2021 yılında yayınlanan pedodonti eğitimi çekirdek müfredatına uygun olarak oluşturulan sorular Google Forms üzerinden Türkiye'nin farklı üniversitelerinde eğitim alan uzmanlık öğrencilerine gönderilerek cevaplandırıldı. Toplamda 92 ankete cevap alınarak cevaplar istatistiksel olarak değerlendirildi.

Bulgular: Pedodonti eğitimi içeriği ile ilgili yöneltilen sorulara çoğunlukla "yeterli" cevabı alınmıştır. Katılımcıların büyük çoğunluğunun ise bilimsel araştırmalara katılmadığı tespit edilmiştir. Katılımcılara pedodonti müfredatında teorik olarak hangi konularda en yetkin oldukları sorulduğunda, en az seçilen konular sırasıyla sedasyon altında diş tedavileri, odontojenik enfeksiyonlar ve cerrahi tedavi yaklaşımları ve minör ortodontik tedavi uygulamaları olmuştur. Hangi klinik tedavi uygulamalarını gerçekleştirdikleri sorulduğunda, en az seçilen konular sırasıyla sedasyon altında diş tedavileri, zirkonyum kron uygulamaları ve daimi diş çekimleri olmuştur.

Sonuç: Genel olarak alınan yanıtlar değerlendirildiğinde; Türkiye'de pedodonti eğitim süreci ve içeriğinin müfredata uygun olarak yürütüldüğü ancak uzmanlık öğrencilerinin akademik çalışmalarına katılımlarının teşvik edilmesi gerektiği sonucuna varılabilir. Türkiye'deki pedodonti eğitim içeriği ve klinik uygulamalar yeni çalışmalarla ayrıntılı olarak değerlendirilmeli ve eksik görülen konular üzerine durularak pedodonti eğitim içeriği en iyi hale getirilmelidir.

Anahtar Kelimeler: Anket, Pedodonti, Pedodonti Eğitim Müfredatı.

specified theoretical education, clinical applications, and academic and scientific activities.³ These components should be included in the programs of all faculties providing Pediatric dentistry education in Turkey.

A literature review reveals that no studies have evaluated Pediatric dentistry speciality education conducted in Turkey for approximately 12 years. Based on this observation, our research aims to assess the functioning of Pediatric dentistry education in Turkey. This will be achieved by administering survey questions, prepared with consideration of the educational curriculum, to speciality students from different faculties and analysing their responses.

Material and Method

The Ataturk University Faculty of Medicine Ethics Committee provided ethical approval for our survey study. According to current data, as of 2023, there are approximately 533 pediatric dentistry speciality student in Turkey.⁴ Based on this, similar studies that can be used for calculating sample size were examined, and the sample size calculation that provided the highest number according to the statistical methods to be applied in line with the main hypotheses was considered. In this study, the 'G. Power-3.1.9.2' program was used⁵, and at a 95% confidence level ($\alpha=0.05$), the standardised effect size

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was calculated as 0.15 (moderate)⁶ due to the absence of a similar study, and the minimum sample size was determined to be 90 with a theoretical power of 0.80.

To evaluate the specialty education in Turkey, a 19-item questionnaire (closed-ended) was developed considering the speciality training regulations and core curriculum. This survey was distributed electronically to speciality students at other faculties using Google Forms between April 3 and August 5, 2024. Each participant was ensured to respond to the survey only once, and the responses were collected electronically. 92 responses were received during this period, and the study was concluded. The collection of participant responses adhered to Google's privacy policy (<https://policies.google.com/privacy>), ensuring anonymity and confidentiality. No names or contact information of the participants were collected. Descriptive statistics were used to define the response rate for each question. The collected data were statistically analysed using the chi-square test in the SPSS 26.0 (IBM, Chicago, USA) software package, and the significance level in the statistics was set at $p < 0.05$.

Results

The distribution of participants' demographic characteristics and regarding pediatric dentistry education of the participants are provided in Table 1.

Table 1. Distribution of Participants' Demographic Characteristics and Regarding Pediatric Dentistry Education

		n	%
Sex	Man	14	15,2
	Female	78	84,8
Age	<25	8	8,7
	25-29	66	71,7
	30-34	17	18,5
	≥40	1	1,1
What year are you in your pediatric dentistry education?	0-1	26	28,3
	1-2	27	29,3
	2-3	25	27,2
	3-4	3	3,3
	Above 4 years	11	12
How many years after graduating from the Faculty of Dentistry did you start your pediatric dentistry education?	Within 1 year	41	44,6
	1-3 years	41	44,6
	Above years 3	10	10,8

Descriptive statistics concerning participants' opinions on the pediatric dentistry education process are presented in Table 2. Chi-square tests were conducted to compare the proportion of responses to the questions. The analysis revealed statistically significant differences among the responses to each question ($p < 0.05$).

Table 2. Distribution of Participants' Responses Concerning Their Opinions on the Pediatric Dentistry Education Process

		n	%	Expected %	% Difference	p
Could you share your opinions about the duration of pediatric dentistry education?	Short	9	9,8	30,7	-21,7	<0,001*
	Long	10	10,9	30,7	-20,7	
	Adequate	73	79,3	30,7	42,3	
Do you find the theoretical content of the pediatric dentistry education sufficient?	Undecided	32	34,8	18,4	13,6	<0,001*
	Quite adequate	4	4,3	18,4	-14,4	
	Quite inadequate	8	8,7	18,4	-10,4	
	Adequate	21	22,8	18,4	2,6	
	Inadequate	27	29,3	18,4	8,6	
Do you believe that the number of patients you treat during the pediatric dentistry training process is sufficient for you to have the necessary knowledge and experience?	Undecided	13	14,1	18,4	-5,4	<0,001*
	Quite adequate	31	33,7	18,4	12,6	
	Quite inadequate	1	1,1	18,4	-17,4	
	Adequate	44	47,8	18,4	25,6	
	Undecided	3	3,3	18,4	-15,4	
Do you think that the materials you use in the pediatric dentistry training process and the physical facilities of the institution are adequate?	Undecided	21	22,8	18,4	2,6	0,006*
	Quite adequate	18	19,6	18,4	-0,4	
	Quite inadequate	5	5,4	18,4	-13,4	
	Adequate	27	29,3	18,4	8,6	
Do you consider the rotation trainings and durations included in the pediatric dentistry curriculum to be sufficient?	Inadequate	21	22,8	18,4	2,6	
	Undecided	34	37	18,4	15,6	0,001*
	Quite adequate	8	8,7	18,4	-10,4	
	Quite inadequate	1	1,1	18,4	-17,4	
	Adequate	32	34,8	18,4	13,6	
What are your thoughts on how other dental speciality branches perceive pediatric dentistry?	Inadequate	17	18,5	18,4	-1,4	
	Undecided	32	34,8	18,4	13,6	<0,001*
	Quite positive	6	6,5	18,4	-12,4	
	Quite negative	5	5,4	18,4	-13,4	
	Positive	35	38	18,4	16,6	
How would you evaluate the education you received in order to consider yourself as a competent dentist upon completing the pediatric dentistry training process?	Negative	14	15,2	18,4	-4,4	
	Undecided	32	34,8	23	9	<0,001*
	Quite adequate	13	14,1	23	-10	
	Adequate	41	44,6	23	18	
	Inadequate	6	6,5	23	-17	

* $p < 0.05$, bold text indicates high rates, and italic text indicates low rates.

Responses regarding the theoretical training received by participants during the pediatric dentistry education process, their practical applications, and which educational activities are routinely conducted are shown in Table 3.

Table 3. Distribution of Participants' Views on the Content of Pediatric Dentistry Education

		n	%
What topics are you proficient in theoretically during the pediatric dentistry training process?	Pedodontic Examination, Radiology, and Diagnosis	85	92,4
	Behavior guidance techniques and pain control	77	83,7
	Dental treatments under general anesthesia	57	62
	Dental treatments under sedation	16	17,4
	Approach to dental treatment in children with special needs and/or systemic diseases	45	48,9
	Early childhood caries and preventive treatments	66	71,7
	Restorative treatments and restorative agents applied to primary and permanent teeth in pedodontics	84	91,3
	Endodontic treatment approaches applied to primary and permanent teeth in pedodontics	80	87
	Space maintenance applications	74	80,4
	Minor orthodontic treatment applications	27	29,3
	Odontogenic infections and surgical treatment approaches	24	26,1
	Traumatic dental injuries	69	75
During the pediatric dentistry training period, what treatment procedures do you perform in the clinic?	Preventive dental treatments	90	97,8
	Dental treatments under general anesthesia	68	73,9
	Dental treatments under sedation	17	18,5
	Treatment of traumatic dental injuries	89	96,7
	Regenerative endodontic treatments	85	92,4
	Stainless steel crown applications	82	89,1
	Zirconium crown applications	20	21,7
	Extractions of primary teeth	83	90,2
	Extractions of permanent teeth	31	33,7
	Fixed and removable space maintainers	84	91,3
	Restorative and endodontic treatments for primary and permanent teeth	92	100
	Minor orthodontic treatments	42	45,7
During your pediatric dentistry training, which training activities are routinely implemented?	Scientific seminars	52	56,5
	Literature discussions	56	60,9
	Case planning presentations	27	29,3
	Scientific courses	12	13
	None	13	14,1

Descriptive statistics for participants' responses to questions about academic activities during the pediatric dentistry education process are provided in Table 4. Chi-square tests were performed to compare the proportions of responses. The analyses found statistically significant differences among the responses to each question ($p < 0.05$).

Table 4. Distribution of Participants' Responses to Questions Regarding Academic Activities in the Pediatric Dentistry Education Process

		n	%	Beklenen %	% Fark	p
Are you encouraged to participate in congresses, scientific meetings, and to give presentations?	Yes	69	75	46	23	<0,001*
	No	23	25	46	-23	
Are you actively involved in scientific research?	Yes	30	32,6	46	-16	0,001*
	No	62	67,4	46	16	
How do you evaluate the physical, financial resources, and research support provided by your institution during the preparation process of your thesis?	Undecided	45	48,9	18,4	26,6	<0,001*
	Quite adequate	4	4,3	18,4	-14,4	
	Quite inadequate	3	3,3	18,4	-15,4	
	Adequate	27	29,3	18,4	8,6	
Do you believe that the pre-graduation final exam system is sufficient?	Inadequate	13	14,1	18,4	-5,4	
	Undecided	39	42,4	23	16	<0,001*
	Quite adequate	10	10,9	23	-13	
	Adequate	41	44,6	23	18	
How do you evaluate the contribution of your academic advisor to your training process during the pediatric dentistry training?	Inadequate	2	2,2	23	-21	
	Undecided	24	26,1	18,4	5,6	<0,001*
	Quite adequate	20	21,7	18,4	1,6	
	Quite inadequate	3	3,3	18,4	-15,4	
	Adequate	32	34,8	18,4	13,6	
	Inadequate	13	14,1	18,4	-5,4	

* $p < 0.05$, bold text indicates high rates, and italic text indicates low rates.

Discussion

With the rapid advancements in the field of dentistry from the past to the present, interest in postgraduate dental education has increased. In Turkey, the significant issues related to oral and dental health among children aged 0-14 years² have necessitated an increased demand for pedodontist specialists, making pediatric dentistry a popular choice for postgraduate education. Faculties providing pediatric dentistry education must offer a curriculum that aligns with the core education curriculum and training regulations, ensuring that well-equipped physicians can operate throughout Turkey and provide high-quality health services. Therefore, our study administered survey questions to students undergoing speciality training at different universities to evaluate the operation of pediatric dentistry education in Turkey.

According to the responses given in our study, most of the postgraduate students receiving pediatric dentistry training in Turkey are female physicians aged between 25 and 29. Upon examining the literature, it is seen that there are gender-based tendencies in speciality preferences, and the fact that female physicians prefer the field of pediatric dentistry supports our results.^{7,8} Furthermore, the survey revealed that most participants started specialised training within 3 years after graduation. The reason for beginning specialisation training shortly after undergraduate education is thought to be due to the increasing popularity of dental specialisation in Turkey.

Upon evaluating the responses provided by the participants about the pediatric dentistry education process in Turkey, it is seen that the majority of answers are "satisfactory". Only the questions "Do you find the theoretical content of pediatric dentistry education satisfactory?" and "Do you think the rotation branches and durations determined by the Board of Medical Specialisation are satisfactory?" in this field got mostly the answer "I am uncertain". The pediatric dentistry curriculum encompasses a significant portion of dental education. Since pediatric dentistry is a dynamic and innovative field, it necessitates ongoing monitoring of recent advancements.⁷ Consequently, this is believed to augment both the clinical and theoretical knowledge requirements in the field of pediatric dentistry. Hence, the reason for response to the question "Is the theoretical content of pediatric dentistry education satisfactory to you?" is "I am

uncertain" can be because of that.

In addition to clinical practices and theoretical training in pediatric dentistry, it is essential to undergo rotational training in dentistry departments that focus on critical areas within the pediatric dentistry curriculum, as well as in other specialities within the college of medicine.¹ According to the current curriculum, during the pediatric dentistry speciality training, it is required to complete rotation training in the areas of Oral and Maxillofacial Surgery, Orthodontics, Anesthesiology and Reanimation, and Child Health and Diseases for a duration of 1 month.³ Pediatric dentistry is a field of specialised profession that shares a common basis with other specialities, as well as covering various disciplines, procedures and skills in the field of medicine.⁹ The response to the question about the rotation branches and durations in pediatric dentistry training, which includes many disciplines, was given as "uncertain", and rotation branches and durations are not considered satisfactory.

The subjects identified for clinical proficiency within the core curriculum of pediatric dentistry education in Turkey are as follows: Anomalies and pathologies in teeth and tooth-supporting tissues were determined as pulp diseases, periodontal diseases, traumatic dental and soft tissue injuries, malocclusions, TMJ disorders, signs of abuse and oral pathologies.³ The chosen curriculum topics appear to align with the prescribed training topics for the pediatric dentistry speciality as outlined by the American Academy of Pediatric Dentistry (AAPD).¹⁰ Using the curriculum topics, we designed questions to assess the participants' proficiency in both theoretical knowledge and clinical practices. The question that received the lowest response rate was related to dental treatment methods performed under sedation.

Sedation and general anaesthesia procedures, which are pharmacological methods of guiding behaviour, are commonly employed in the field of pediatric dentistry and are essential topics in pediatric dentistry education included in all advanced pediatric dentistry training programs.¹¹ While sedation is frequently used in clinics, dental treatments often require general anaesthesia due to challenges in controlling the level of sedation and the necessity for more reliable execution of many procedures.¹² Our study found that most participants did not demonstrate expertise in dental treatment techniques under sedation, both in terms of theoretical knowledge and practical application. In contrast, a more significant number of participants achieved proficiency in dental procedures performed under general anaesthesia. The high prevalence of oral and dental health issues among children aged 0-6 in Turkey² has led to an increased demand for dental treatments performed under general anaesthesia. Additionally, the availability of general anaesthesia services at universities offering pediatric dentistry education has made it easier for patients to access these treatments.¹³

Sedation applications are generally preferred in clinics for several reasons, including the difficulty of accessing general anaesthesia service and its high cost, possible side effects and the fact that it is not considered necessary for every procedure.¹¹⁻¹³ According to the advanced pediatric dentistry accreditation standards, education programs must include sedation applications, and each student should be provided with a specific number of opportunities to perform dental treatments under sedation.¹³ According to the results of our study, most of the participants lack knowledge and practice in dental treatments under sedation, and it is recommended that improvements be made in this area.

The management of odontogenic infection is a crucial issue in the field of pediatric dentistry. Pediatric dentistry must possess knowledge and proficiency in medical therapies and perform dental extractions, incisions, and drainage as surgical interventions. They should also be skilled in pulp therapy or periodontal debridement procedures to eliminate odontogenic infections.^{14, 15} Based on the findings of our study, it was concluded that while all participants were familiar with pulp treatments, only 26% possessed knowledge of odontogenic infections and surgical methods. It was shown that only 34% of clinical practices have expertise in permanent tooth extraction. The study conducted by Yassa and Khattab¹⁶ revealed that 75% of the students who completed advanced pediatric dentistry training had a high level of proficiency in surgical procedures. At the same time, half showed proficiency in applying medical treatments. Considering these results, it is thought that speciality students should have more knowledge about managing odontogenic infections and surgical interventions.

Another topic that most of the participants do not have a theoretical comprehension is minor orthodontic treatments. The Commission on Dental Accreditation (CODA) states that pedodontic residency training should thoroughly cover the fundamental biomechanical concepts of growth and development and tooth movement, together with the clinical implementation of interceptive orthodontic therapies.¹⁷ However, the growing demand for restorative and endodontic procedures in children has led to a greater emphasis on these areas in the theoretical education and practical training of pediatric dentistry, potentially resulting in inadequate coverage of orthodontics in pediatric dentistry education.¹⁸

Zirconia crown applications appear to be one of the clinical practices that the participants do least often. The utilisation of zircon crowns in pediatric dentistry was initially introduced in 2008.¹⁹ Stainless steel crown restorations are widely regarded as the gold standard method in pediatric dentistry since they have a high success rate in clinical settings, provide long-lasting and cost-effective restorations, and are not easily affected by technical issues.²⁰ However, the fact that, especially in anterior teeth, they do not provide adequate aesthetics, do not cause gingival inflammation due to less plaque accumulation, and are not biocompatible restorations has brought importance to zirconia crown applications today.²¹ Pedodontic zirconia crown applications are not commonly utilised in pediatric dentistry training institutes due to their expensive costs and the need for a specialised application method.²¹ It is observed that most participants do not use zircon crowns. Paediatric zirconia crowns, which are now in high demand, should be more commonly used in clinical practices for pediatric dentistry training.

According to both the pediatric dentistry education curriculum in Turkey and CODA, active involvement in academic activities and research should be considered a significant topic in postgraduate education. Throughout their education, students are expected to have the ability to gather and evaluate scientific data, integrate the evidence-based learning approach, and share scientific findings.²² The survey revealed that a significant number of participants actively participated in scientific seminars, literature debates, case presentations, and scientific courses. This suggests that students pursuing postgraduate education in Turkey have the potential to acquire the required level of expertise.

Based on the findings of our study, it was concluded that 68% of the participants were not involved in academic research. In contrast to our findings, Rhodes and Wilson's²² survey of students in several graduate programs demonstrates that 87% of the programs provide sufficient time and actively promote research among students. The primary challenges in programs with limited research opportunities are the need to allocate more time to clinical treatment practices, faculty members' lack of enthusiasm for research, and insufficient financial resources, which are shown as the main problems.¹⁶ Our survey found that 81% of the participants reported providing patient care at a satisfactory level, indicating a greater emphasis on clinical treatments rather than academic research. In addition, the fact that more than half of the participants reported inadequate financial assistance for their thesis studies can be shown as a crucial factor contributing to the lack of focus on academic pursuits. The finding that 57% of the participants evaluated the academic advisor's contribution to the educational process as satisfactory implies that the reasons for non-participation in academic studies may be influenced by other variables. These results suggest that in the pediatric dentistry education process in Turkey, it is necessary to enhance the focus of graduate students on scientific research. This can be achieved by reducing the time spent on treatment practices in the clinic and increasing the time and financial resources dedicated to research.

Specialised training in the field of dentistry has grown extremely popular in Turkey. The educational programs must adhere to the prescribed curriculum. Currently, there is a lack of research examining postgraduate education in pediatric dentistry in Turkey. Our study aims to contribute valuable insights to the existing literature on this topic.

However, the limitations of our study include the fact that the validity and reliability of the survey used were not tested, the small number of participants, and the fact that, although responses were obtained from most universities in Turkey, not all universities were

reached. According to our research findings, it is advisable to contribute to the curriculum if deemed required. Furthermore, it is advisable for educational institutions to include the necessary enhancements in their curriculum, addressing the deficiencies identified in our study.

Conclusion

The participants answered 'adequate' to most of the survey questions prepared considering the pediatric dentistry speciality education curriculum. According to the responses received, dental treatment applications under sedation were found to be deficient both theoretically and clinically in the training content. The results of our study will provide an essential resource in terms of the areas in which the pediatric dentistry speciality training curriculum in Turkey should be developed and improved.

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İki Dış Hakem / Çift Taraflı Körleme

Etik Beyan / Ethical statement

Bu makale, "Necmettin Erbakan Üniversitesi 3 Uluslararası Dış Hekimliği Kongresi'nde" sözlü olarak sunulan ancak tam metni yayımlanmayan "Evaluation of Pediatric Dentistry Postgraduate Education in Turkey by Specialty and PhD Students" adlı tebliğin içeriği geliştirilerek ve kısmendeğiştirilerek üretilmiş hâlidir.

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It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited are stated in the bibliography.

Benzerlik Taraması / Similarity scan

Yapıldı - ithenticate

Etik Bildirim / Ethical statement

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