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The Effect of Clinical Education Levels of Undergraduate Dental Students on Dental Anxiety and Empathy Levels

Diş Hekimliği Lisans Öğrencilerinin Klinik Eğitim Düzeylerinin Dental Anksiyete ve Empati Düzeylerine Etkisi

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ABSTRACT

Objectives: The social dentistry approach includes not only solving the problems of patients, as in the biomedical model, but also investigating the causes of their problems.It is crucial to have a thorough understanding of the patients, to have empathy for them, to consider the anxiety they will experience, and to be enlightening during treatment.The aim of the present study is to evaluate the dental anxiety(DA) and empathy levels of students at various levels of clinical education.

Materials and Methods: A questionnaire form was created using a digital platform. The questionnaire tool used in the research consists of three parts: 1.Questions about sociodemographic data; 2.Dental Anxiety and Fear Index(IDAF-+4C+) Turkish version; and 3.Jefferson Scale of Physician Empathy-S version.

Results:510 dentistry students were included in the study. There was no difference between the DA levels of the clinician, observer and preclinical student groups(p=0.765). However, there was a significant difference between empathy scores(p<0.001), and the lowest mean empathy scores were found in the clinician-student group. No correlation was found between DA and the empathy scores of students(rho=0.026, p=0.557).

Conclusion: There is no significant difference between the DA levels of students at various stages of undergraduate education. This may be an indication that the theoretical, practical, and clinical education of dentistry is not effective in inducing or reducing students' DA levels. In addition, it can be thought that the decrease in empathy levels in the clinician-student group may be related to the difficulty of dental clinical education, the intense workload, and the stress induced by clinical responsibilities.

Keywords: *Dental anxiety, Dental education, Dental students, Dentistry, Empathy*

ÖZET

Amaç: Sosyal diş hekimliği yaklaşımı, biyomedikal modelde olduğu gibi sadece hastaların sorunlarının çözülmesini değil, aynı zamanda sorunlarının nedenlerinin araştırılmasını da içermektedir. Tedavi sırasında hastaları iyi anlamak, onlarla empati kurmak, yaşayacakları kaygıyı dikkate almak ve aydınlatıcı olmak çok önemlidir. Bu çalışmanın amacı klinik eğitimin çeşitli kademelerindeki öğrencilerin diş hekimliği kaygısı (DA) ve empati düzeylerini değerlendirmektir.

Gereç ve Yöntemler: Dijital platform kullanılarak anket formu oluşturuldu. Araştırmada kullanılan anket aracı üç bölümden oluşmaktadır: 1. Sosyodemografik verilere ilişkin sorular; 2. Dental Kaygı ve Korku İndeksi (IDAF-+4C+) Türkçe versiyonu ve 3. Jefferson Hekim Empati Ölçeği-Öğrenci versiyonu.

Bulgular: Çalışmaya 510 diş hekimliği öğrencisi dahil edildi. Klinisyen, gözlemci ve klinik öncesi öğrenci gruplarının DA düzeyleri arasında fark yoktu (p=0,765). Ancak empati puanları arasında anlamlı fark vardı (p<0,001) ve en düşük ortalama empati puanları klinisyen öğrenci grubunda bulundu. DA ile öğrencilerin empati puanları arasında ilişki bulunamadı (rho=0,026, p=0,557).

Sonuç: Lisans eğitiminin çeşitli aşamalarındaki öğrencilerin DA seviyeleri arasında anlamlı bir fark yoktur. Bu durum diş hekimliği teorik, pratik ve klinik eğitiminin öğrencilerin DA düzeylerini yükseltmede veya düşürmede etkili olmadığının göstergesi olabilir. Ayrıca klinisyen öğrenci grubundaki empati düzeylerinin azalmasının diş hekimliği klinik eğitiminin zorluğu, yoğun iş yükü ve klinik sorumlulukların yarattığı stres ile ilişkili olabileceği düşünülebilir.

Anahtar Kelimeler: *Dental anksiyete, Diş hekimliği eğitimi, Diş hekimliği öğrencileri, Diş Hekimliği, Empati*

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Introduction

Anxiety is a natural response to stress. On the other hand, dental fear or anxiety is defined as the anxiety that individuals of all ages experience in response to a threat associated with dental treatment or the dental environment, which can affect individuals of all ages.[1] Dental anxiety (DA) is a prevalent issue among children and adolescents aged three to 18 worldwide. In addition, it has been stated that anxiety decreases with age and that school-aged and primary children experience it more frequently than adolescents.[2] However, cultural, social, and economic differences between populations as well as individual disparities might be responsible for the occurrence of DA at all ages.[3] According to a study, the level of DA among adult patients who attended to dental clinics was quite high.[4] In the long run, DA can contribute to more serious dental problems and complex treatment requirements,[5] as it causes patients to delay dental treatment and avoid routine checkups. According to studies, treating patients with DA is a significant source of stress for dentists.[6]

Patients today expect their physicians to be considerate, tolerant, and helpful. Physicians' humanistic approaches can be utilized to address this situation. Respect, concern, empathy, and an understanding of the patient are a few of the components of this approach. Empathy is one of the most significant factors that influence the physician-patient relationship. Empathy, which is defined as "the act of correctly accepting the emotional state of another person without experiencing that situation," is one of the most important factors affecting the physician-patient relationship. Understanding patient complaints, previous physician experiences, and previous illnesses or symptoms, as well as effectively communicating this comprehension to patients, are essential components of clinical empathy. The treatment compliance of patients is increased by the health professionals' positive attitude and empathic behavior.[7]

In many countries around the world, training medical students to be empathic physicians has become a stated learning objective in recent years. Empathy in the context of care and treatment has extensive benefits for both physicians and patients, according to research.[8,9] Although there are studies examining the relationship between clinical experience and empathy levels among medical school students, there are limited studies on the education levels and empathy or DA levels of dental students (DSs).

The aim of this study is to evaluate the DA and empathy levels of DSs at various levels of dental education.

Materials and Methods

The present study was carried out with the approval of Eskişehir Osmangazi University Non-Interventional Clinical Research Ethics Committee (Approval Date/Number: 20.06.2023/57). The research was conducted with DSs from the Faculty of Dentistry at Eskişehir Osmangazi University. Students participated in the study by completing the questionnaire created by the "Google Form" free web-based virtual survey generator. Students who participated in the survey were classified based on their level of education and clinical relationship with the patient. These groups include the preclinical (first and second year DSs), observer (third year DSs), and clinician (Fourth and fifth year DSs) categories.

The questionnaire is composed of three sections. In the first section of the questionnaire, sociodemographic information (age, gender, undergraduate class, prior dental treatment experience) about DSs was questioned. In the second part of the questionnaire, the Turkish version of the Dental Anxiety and Fear Index (IDAF-+4C+) was used. The IDAF-4C+ has three independent modules. In the present study, DA levels were determined using the IDAF-4C module of the IDAF-4C+, which grades the level of anxiety associated with dental stimuli. IDAF-4C item responses consist of 8 questions ranging from "disagree" one to "strongly agree" five, and higher scores show more dental fear. The categorization of the scale scores[5] is shown in Table 1.

Table 1. The categorization of the scale scores

Score Range	Category
1-1.5	No or very little dental fear
1.51-2.5	Low dental fear
2.51-3.5	Moderate dental fear
>3.5	High dental fear

The Student Version of Jefferson Scale of Physician Empathy was used in the third section of the questionnaire. This version was created to assess medical students' attitudes toward doctor-patient empathy in the context of patient care. The scale consists of 20 items (10 items with positive statements and 10 items with negative statements) answered on a seven-point Likert scale from one (strongly disagree) to seven (strongly agree). The score range is 20-140, higher scores indicate higher

empathic consistency.[10]

IBM® SPSS® version 27 was used for data analysis. The student's age, which is continuous data from descriptive data, was presented as mean and standard deviation, and categorical data was presented as frequency and percentage. The normal distribution of DA and empathy scores was checked with the Kolmogorov-Smirnov test. In the examination of the relationship between DA and empathy scores and sociodemographic factors, since the data did not show a normal distribution, the Spearman correlation test was used to analyze the relationship between two continuous data sets, the Mann Whitney U test was used to compare the median values of two independent groups, and the Kruskal-Wallis test was used to compare the median values of three independent groups. In cases where a difference was detected between the groups in the Kruskal Wallis test, pairwise comparisons were made to determine which groups the difference originated from. Statistically significant p value was determined as 0.05.

Results

510 dental students participated in the study. One participant was excluded due to missing data. Statistical analyzes were performed with data from 509 participants.

The sociodemographic characteristics of the participants is presented in Table 2.

The students' mean DA score was 2.32 ± 0.79, and the mean empathy score was 100.46 ± 22.75. When the dental anxiety and empathy levels of male and female students were compared, it was determined that female students' dental anxiety and empathy levels were statistically significantly higher than those of male students ($p<0.001$). Also, it was determined that the status of education of dentistry students did not affect their dental anxiety scores ($p>0.05$). Significant differences were observed between the empathy scores of dentistry students according to their educational level ($p<0.001$). The clinician student group had the lowest empathy scores (Table 3). In addition, the dental treatment history of dental students was found to have no effect on their dental anxiety and empathy levels.

Table 2. Sociodemographic characteristics of dentistry students

		Mean	Standard deviation
Age		Mean	Standard deviation
		Mean	Standard deviation
Gender	Mean	Standard deviation	57.2
	Mean	Standard deviation	42.8
Education level in the faculty of dentistry	Mean	Standard deviation	25.7
	Mean	Standard deviation	24.0
	Mean	Standard deviation	17.7
	Mean	Standard deviation	16.1
	Mean	Standard deviation	16.5
Having a history of dental treatment	Mean	Standard deviation	91.6
	Mean	Standard deviation	8.4
Dental anxiety level*	Mean	Standard deviation	19.1
	Mean	Standard deviation	42.6
	Mean	Standard deviation	30.8
	Mean	Standard deviation	7.5

* According to the Turkish version of the Dental Anxiety and Fear Index (IDAF-+4C+)

No correlation was found between DA and empathy scores (rho=0.026, p=0.557). As the age of the dental students increased, their level of DA and empathy decreased (rho=-0.116, p=0.009; rho=-0.257, $p<0.001$, respectively). The comparison of dental anxiety and empathy scores according to the sociodemographic characteristics of the students is shown in Table 3.

Table 3. The comparison of dental anxiety and empathy scores according to the sociodemographic characteristics of the students

		Dental anxiety scores	Statistical analysis	Empathy scores	Statistical analysis
Gender	**Female**	2.40 (2.00- 2.90)	L=25221.000	104 (81-124)	U=24747.000
	Male	2.10 (1.60- 2.70)	p<0.001	85.50 (80- 116)	p<0.001
Educational status in the faculty of dentistry	**Preclinical (a)**	2.30 (1.75- 2.90)	kW=0.537	108 (83-125)	kW=70.670
	Observer (b)	2.20 (1.77-2.80)	p=0.765	110 (90.25- 123.25)	p<0.001
	Clinician (c)	2.20 (1.80- 2.90)		80.50 (80.00- 96.00)	
					ac: p<0.001
					bc: p<0.001
Having a dental treatment history	**Yes**	2.30 (1.80- 2.90)	L=11282.000	98 (80-121)	U=9394.500
	No	2.00 (1.40- 2.90)	p=0.171	106 (81-121)	p=0.498

Discussion

The social dentistry approach is a method that not only solves the problems of the patients, as in the biomedical model, but also investigates the causes of their problems.[11] In this context, it is very important for the physician to adequately understand her or his patients, to empathize, to take into account the fear they will experience, and to be enlightening during the treatment.

Clinical empathy is challenging to measure due to its multidimensional nature. Despite the fact that numerous empathy measurement instruments are utilized in research, it has been reported that each instrument has shortcomings. In this context, the relatively well-known and validated Jefferson Physician Empathy Scale can be used to assess physician empathy.[7,8] As a result, we utilized the Jefferson Scale of Physician Empathy-Student version to evaluate the levels of empathy of DSs in the present study.

Numerous studies have investigated the clinical empathy levels of physicians and physician candidates. However, the literature reveals that studies investigating the empathy levels of medical faculty students have yielded divergent results. Examining the studies, it was found that some participants' empathy levels decreased as their education progressed,[12–14] while others' empathy levels increased, particularly as their contact with patients increased.[15,16] In the literature, gender and level of education stand out as two of the factors that contribute to differences in students empathy levels. In line with a study conducted in the United States of America, a study conducted in Japan revealed that female medical students had higher empathy scores than male students.[17,18] Similarly, in the present study, empathy scores of female DSs were found to be statistically significantly higher than male DSs. In addition, it was also found that clinician DSs had lesser empathy scores than observer and preclinical students. However, a reexamination of research in this area revealed no firm evidence of a decline in empathy during undergraduate medical education, only a very slight decline.[19]

The outcomes of studies evaluating the empathy levels of students at two different dental faculties in Turkey are divergent.[20,21] According to a study, the fourth and fifth graders had the highest levels of empathy compared to the other grades.[20] On the other hand, in a study comparing the empathy levels of third, fourth, and fifth grade students, a decrease was observed in empathy levels towards the last grade.[21] Contrary to the study of Hepdeniz et al.,[20] in this study, the empathy scores of the clinician DSs were observed to be higher than those of the preclinical DSs. Despite the fact that Kaya and Oztan did not evaluate the preclinical student group in their study, they observed that the DSs in the final year had the lowest empathy levels compared to the other classes.[21] This result is similar to the fact that the clinician student group in the present study had lower empathy levels compared to the other groups. Another explanation for this circumstance may be the limited education in clinical dentistry education, which incorporates social disciplines such as communication skills, behavioral sciences, and psychiatric.

Anxiety is defined as apprehension about an event whose outcome is uncertain. Despite the development of modern dentistry, the prevalence of dental problems, which is one of the most important public health problems affecting the quality of life of

individuals, may increase due to DA.[1] DA generally refers to individuals' fear of dental procedures, an unusual reaction to dental procedures caused by a lack of understanding. Prior dental treatment experience, fear of injections, the sounds of dental instruments, a lack of control, painful procedures, anesthesia-induced numbness, and feelings of shame can all contribute to DA.[5]

Previous research has demonstrated that being female is a predictor of higher DA.[22,23] Similarly, in this study, female participants had a significantly higher level of DA than male participants($p<0.001$).

According to a number of studies evaluating the DA levels of DSs, the average level of DA was high in the first year.[24–27] The authors concluded that over time, the increase in patient interaction among DSs and their awareness of dental procedures were effective on the reduction of DA. Also, the DA levels of university students who did not receive health education were observed to be higher than those of medical and DSs in a previous study. The authors attribute this situation to the fact that other students did not receive sufficient dental health education.[23] The present study's findings differ from those of studies evaluating the DA levels of students at two different dental faculties in Turkey. According to studies, the DA levels of first-year DSs DSs are higher than those of DSs in different classes.[25,26] On the contrary, the DA levels of the preclinical, observer, and clinical student groups were found to be similar, and it was observed that increasing clinical education levels among DSs did not affect DA levels. We believe this is due to the participants' current low levels of DA across all levels of undergraduate education.

The limitations of the present study are that the population of this research consists of a single dentistry faculty student, and it is still unclear whether the results of the tools measuring empathy levels are an indicator of the physician's efficiency in providing patient care. Moreover, both empathy and dental anxiety have multifactorial etiologies. Therefore, it is impossible to evaluate all of the variables that will influence these two parameters in our investigation.

Conclusion

There is no significant difference between the DA rates of students at various stages of undergraduate education. This may be an indication that the theoretical, practical, and clinical education of dentistry is not effective in inducing or reducing students' DA levels. In addition, it can be thought that the decrease in empathy levels in the clinician student group may be related to the difficulty of dental clinical education, the intense workload, and the stress induced by clinical responsibilities.

Conflict of interest

None of the authors of this article has any relationship, connection or financial interest in the subject matter or material discussed in the article.

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