



## Evaluation of Medical Specialization Education Students' Perceptions of Hospital Education Environment and Affecting Factors

Mustafa Karademir<sup>1,a</sup>, Ezgi Ağadayı<sup>2,b\*</sup>, Seher Karahan<sup>2,c</sup>, Dilay Karademir<sup>3,d</sup>

<sup>1</sup>Cumhuriyet University School of Medicine, Department of Neurosurgery, Sivas, Turkey, <sup>2</sup>Cumhuriyet University School of Medicine, Department of Medical Education, Sivas, Turkey, <sup>3</sup>Cumhuriyet University School of Medicine, Department of Obstetrics and Gynecology, Sivas, Turkey

\*Corresponding author

### Research Article

#### History

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### ABSTRACT

**Aim:** Our aim in this study is to determine the perceptions of medical residency students studying at a university about the hospital education environment and the factors affecting it.

**Methods:** This was a descriptive study. The population of the research consisted of specialty students studying at Sivas Cumhuriyet University. The research questionnaire was sent to the participants via text message to their personal mobile phone numbers. Informed consent was obtained from the participants on the first page of the survey link sent to them. The data collection tool used in the study included a total of 71 questions. The first part was created by the researchers through literature review and included 31 questions. The other 40 questions were Postgraduate Hospital Educational Environment Measure (PHEEM).

**Results:** 266 of the 387 residency students in the faculty participated in the survey (Response rate: 68.7%). 79% of residency students studying in medical sciences and 56% in surgical sciences participated in the research. 11.7% (n=23) of residents from medical sciences and 28.6% (n=20) of residents from surgical sciences stated that no seminar hours were held. Postgraduate Hospital Educational Environment Measure mean score of the residency students was found to be 83.6 ± 25.5. The mean score did not differ significantly between departments (p=0.578). Those who thought that there were enough residents and faculty members had higher educational environment measure scores (respectively p=0.010 and p<0.001). The educational environment scale scores of the specialty students who participated in scientific research and participated in the congress were higher than the groups that did not participate (respectively p<0.001 and p=0.001). 52.3% (n=139) of the residency students evaluated the education environment as more positive than negative, but room for improvement.

**Conclusion:** Most of the students evaluated the educational environment positively. In order to improve the perception of the educational environment, student seminar training and congress participation should be supported, and the number of faculty members should be brought to optimal levels.

**Keywords:** Medical Education, Hospital, Environment, Medical Residency, Physicians

## Tıpta Uzmanlık Öğrencilerinin Hastane Eğitim Ortamına İlişkin Algılarının ve Etkileyen Faktörlerin Değerlendirilmesi

#### Süreç

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### ÖZ

**Amaç:** Bu çalışmadaki amacımız, bir üniversitede tıpta uzmanlık eğitimi alan öğrencilerin hastane eğitim ortamına ilişkin algılarını ve etkileyen faktörleri belirlemektir.

**Yöntem:** Bu tanımlayıcı bir çalışmaydı. Araştırmanın evrenini Sivas Cumhuriyet Üniversitesi'nde öğrenim gören uzmanlık öğrencileri oluşturmuştur. Araştırma anketi, katılımcıların kişisel cep telefon numaralarına kısa mesaj yoluyla gönderilmiştir. Katılımcılardan kendilerine gönderilen anket bağlantısının ilk sayfasında bilgilendirilmiş onam alınmıştır. Araştırmada kullanılan veri toplama aracı toplam 71 soru içermektedir. Birinci bölüm araştırmacılar tarafından literatür taraması yapılarak oluşturulmuş ve 31 sorudan oluşmaktadır. Diğer 40 soru Mezuniyet Sonrası Hastane Eğitim Ortamı Ölçeği (PHEEM) idi.

**Bulgular:** Fakülte'deki 387 asistan öğrencisinden 266'sı ankete katılmıştır (Yanıt oranı: %68,7). Araştırmaya dahili bilimlerinde öğrenim gören uzmanlık öğrencilerinin %79'u, cerrahi bilimlerden ise %56'sı katılmıştır. Tıp bilimleri asistanlarının %11,7'si (n=23), cerrahi bilimler asistanlarının %28,6'sı (n=20) seminer saati yapılmadığını belirtmiştir. Uzmanlık öğrencilerinin Mezuniyet Sonrası Hastane Eğitim Ortamı Ölçeği puan ortalaması 83,6±25,5 olarak bulunmuştur. Ortalama puan bölümler arasında anlamlı farklılık göstermedi (p=0,578). Yeterli asistan ve öğretim üyesi olduğunu düşünenlerin eğitim ortamı ölçüm puanları daha yüksekti (sırasıyla p=0.010 ve p<0.001). Bilimsel araştırmaya katılan ve kongreye katılan uzmanlık öğrencilerinin eğitim ortamı ölçek puanları katılmayan gruplardan daha yüksekti (sırasıyla p<0.001 ve p=0.001). Uzmanlık öğrencilerinin %52,3'ü (n=139) eğitim ortamını olumsuzdan çok olumlu, ancak iyileştirmeye açık olarak değerlendirmiştir.

**Sonuç:** Öğrencilerin çoğunluğu eğitim ortamını pozitif yönde değerlendirmiştir. Eğitim ortamı algısı üzerinde iyileştirme yapılması için öğrenci seminer eğitimleri, kongre katılımları desteklenmeli ve öğretim üyesi sayıları optimal düzeylere getirilmelidir.

**Anahtar sözcükler:** Tıp Eğitimi, Çevre, Lisansüstü Eğitim, Tıp Asistanlığı, Doktorlar

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<sup>a</sup> krdmr58@gmail.com

<sup>b</sup> https://orcid.org/0000-0002-0734-9040

<sup>c</sup> drezgiagadayi@hotmail.com

<sup>d</sup> https://orcid.org/0000-0001-9546-2483

<sup>e</sup> sehermercan58@hotmail.com

<sup>f</sup> https://orcid.org/0000-0002-4066-2928

<sup>g</sup> dr.dilaykarademir@gmail.com

<sup>h</sup> https://orcid.org/0000-0002-9813-4255

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## Introduction

The clinical learning environment (CLE) is a combination of three basic elements that include clinical work, learning, and the environment.<sup>1</sup> CLE is a complex concept and there are different definitions in the literature. The definition of the clinical learning environment as "the social, cultural and material context in which residents learn while working" is concise and comprehensive.<sup>2</sup> Effective and supportive CLE should support residency students' participation in patient care with a supervisor, their participation in designed practice in a controlled space, their development with mentoring and coaching, teamwork and peer collaboration, evaluation, and feedback of the residency students. When these conditions are not adequately met, they have negative effects on patient care and the learning of residents.<sup>2-5</sup>

After graduating from medical school, residency students serve and take care of real patients in their postgraduate specialization training. Teaching in a clinical setting often takes place concurrently with clinical care, with discussion and focus on analysis of patient care.<sup>6</sup> Most clinical trainers are experienced and well trained in the role of providing patient care. However, they do not receive adequate training on the role of teaching and instruction before becoming an academic. Knowledge and skills such as education principles, teaching skills such as learning strategies, measurement and evaluation methods, program development and evaluation, learner-centered modern practices in medical education are provided through educator training programs. These programs are provided through structured short-term courses in many faculties in Turkey. Apart from this, individual development is provided with the experience of senior academics in the faculty. Institutionally structured academics' development monitoring programs are very useful.<sup>6,7</sup>

Postgraduate medical education in Turkey is carried out as specialization in medicine and master's/doctorate programs. The principles of specialty education in medicine are regulated by the "Regulation on Specialization Training in Medicine and Dentistry".<sup>8,9</sup> The duration of specialization training varies between 3 and 5 years, depending on the majors.<sup>10</sup> Medical specialization training authorization of educational institutions programs is carried out by

the Board of Specialization in Medicine (*Tıpta Uzmanlık Kurulu-TUK*).<sup>11</sup>

Our aim in this study is to determine the perceptions of medical residency students studying at a university about the hospital education environment and the factors affecting it.

## Material and Methods

### Study Type

This was a descriptive study.

### Design

The population of the research consisted of specialty students studying at Sivas Cumhuriyet University. Sample selection was not made in the study, and it was aimed to reach the whole universe. Inclusion criteria were volunteering to participate in the study and receiving training in a hospital-trained specialty.

The research questionnaire was sent to the participants via text message to their personal mobile phone numbers by the dean of the medical school. The research questionnaire was filled with the Google forms application. Informed consent was obtained from the participants on the first page of the survey link sent to them. Repeated entries were blocked by IP address.

### Data collection tool

The data collection tool used in the study included a total of 71 questions. The first part was created by the researchers through literature review and included 31 questions. In this part, there were questions about the demographic characteristics of the participants, educational institutions, and training programs. The other 40 questions were Postgraduate Hospital Educational Environment Measure (PHEEM).

PHEEM was developed by Roff et al in 2005 to measure the postgraduate clinical learning and teaching educational environment for hospital-based junior doctors.<sup>12</sup> The scale was adapted into Turkish by Balçioğlu.<sup>13</sup> The Cronbach  $\alpha$ -value calculated in the Turkish validity study was 0.94. In this 40-item scale, it measures the "Perceptions of role autonomy" sub-dimension by items 1, 4, 5, 8, 9, 11, 14, 17, 18, 29, 30, 32, 34 and 40. "Perceptions of teaching" sub-dimension by items 2, 3, 6, 10, 12, 15, 21, 22, 23, 27, 28, 31, 33, 37 and 39. "Perceptions of social support" sub-dimension by items 7, 13, 16, 19, 20, 24, 25, 26, 35, 36 and 38. The total score of the scale is evaluated as follows (Table 1).

**Table 1.** Total score evaluation of the Postgraduate Hospital Educational Environment Measure

0-40	Very poor
41-80	Plenty of problems
81-120	More positive than negative, but room for improvement
121-160	Excellent

### Statistical Analyzes

The SPSS (Statistical Package for Social Sciences) for Windows 18 package program was used for statistical analyzes. The Shapiro-Wilk test was used to determine

whether data had a normal distribution. First, the collected data was used for descriptive statistics. The frequencies for categorical variables and the measures of central tendency (mean  $\pm$  standard deviation) for

continuous variables were calculated. A chi-squared test was used to analyze the categorical data. One way analysis of variance (ANOVA) and independent samples T test were used to compare variables between groups. Post-hoc multiple comparisons were performed by the Bonferroni test for unequal samples. A p value of less than 0.05 was considered for statistical significance, with a 95% CI.

**Ethical Approval**

Ethics committee approval for the study was obtained from Sivas Cumhuriyet University Scientific

Research and Publication Ethics Social and Human Sciences Ethics Committee (09.09.2022-203453).

**Results**

266 of the 387 residency students in the faculty participated in the survey (Response rate: 68.7%). 79% (N=249/n=196) of residency students studying in medical sciences and 56% (N=124/n=70) in surgical sciences participated in the research. The demographic characteristics of the participants are shown in Table 2.

**Table 2.** The demographic characteristics of the participants

	n	%
Gender		
Female	139	52.3
Male	111	41.7
Does not want to specify	16	6.0
Departments		
Medical sciences	196	73.7
Surgical sciences	70	26.3
Graduated faculty		
Cumhuriyet University	84	31.6
Other	182	68.4
Age (Mean±SD)	28.9	2.8
Year of seniority (Mean±SD)	2.5	1.2

34.2% (n=91) of the residency students had attended an orientation training. 11.7% (n=23) of residents from medical sciences and 28.6% (n=20) of residents from surgical sciences stated that no seminar

hours were held. Comparison of the opinions and situations of residency students regarding the residency training processes with the departments are shown in Table 3.

**Table 3.** Comparison of the opinions and situations of residency students regarding the residency training processes with the departments

	Medical sciences n (%)	Surgical sciences n (%)	p
Getting orientation training			
Yes	66 (72.5)	25 (27.5)	0.433
No	130 (74.3)	45 (25.7)	
Opinion on the number of residency student			<b>0.001</b>
Sufficient	138 (81.2)	32 (18.8)	
Partially sufficient	35 (64.8)	19 (35.2)	
Insufficient	23 (54.8)	19 (45.2)	
Opinion on the number of faculty members			0.742
Sufficient	67 (76.1)	21 (23.9)	
Partially sufficient	61 (70.9)	25 (29.1)	
Insufficient	68 (73.9)	24 (26.1)	
Knowledge about core curriculums of specializations in medicine (TUKMOS-TR)			0.595
Had knowledge, it is applied in their department	33 (78.6)	9 (21.4)	
Had knowledge, it is not applied in their department	12 (66.7)	6 (33.3)	
Had no knowledge	151 (73.3)	55 (26.7)	
Participation in scientific research			0.451
Yes	100 (73.0)	37 (27.0)	
No	96 (74.4)	33 (25.6)	
Scientific congress participation			0.315
Yes	112 (71.8)	37 (28.2)	
No	84 (75.2)	33 (24.8)	
Duration of seminars			<b>0.002</b>
Four times a month or more	52 (76.5)	16 (23.5)	
Two or three times a month	54 (87.1)	8 (12.9)	
Once a month	23 (76.7)	7 (23.3)	
Rarer	44 (69.8)	19 (30.2)	
None	23 (53.5)	20 (46.5)	
Seminars' time			<b>0.002</b>
Lunchtime	57 (96.6)	2 (3.4)	
Out of working hours	37 (100)	0 (0)	
Within working hours	79 (62.2)	48 (37.8)	
None	23 (53.5)	20 (46.5)	

Postgraduate Hospital Educational Environment Measure mean score of the residency students was found to be  $83.6 \pm 25.5$ . The mean score did not differ significantly between departments ( $p=0.578$ ). While the mean of those studying in medical sciences was  $84.5 \pm 24.6$ , it was  $82.5 \pm 27.0$  in those studying in surgical sciences. Those who thought that there were enough residents and faculty members had higher

educational environment measure scores (respectively  $p=0.010$  and  $p<0.001$ ). The educational environment scale scores of the specialty students who participated in scientific research and participated in the congress were higher than the groups that did not participate (respectively  $p<0.001$  and  $p=0.001$ ). Comparison of PHEEM score with various variables is shown in Table 4.

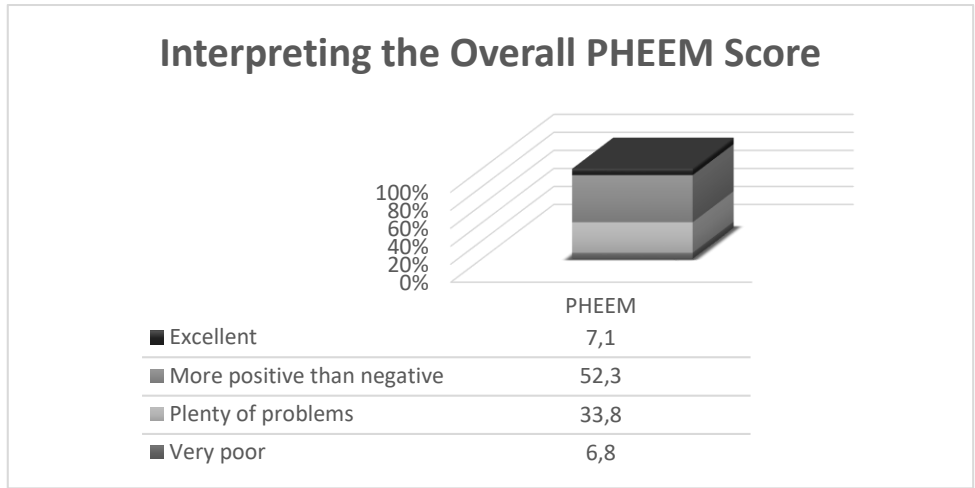
**Table 4.** Comparison of Postgraduate Hospital Educational Environment Measure mean score with various variables

	PHEEM (Mean±SD)	p
Departments		
Medical sciences	$84.5 \pm 24.6$	0.578
Surgical sciences	$82.5 \pm 27.0$	
Graduated faculty		
Cumhuriyet University	$86.5 \pm 25.0$	0.259
Other	$82.8 \pm 25.3$	
Gender		
Female	$82.5 \pm 23.4$	0.124
Male	$87.1 \pm 25.4$	
Does not want to specify	$75.0 \pm 36.0$	
Getting orientation training		
Yes	$84.0 \pm 25.2$	0.982
No	$83.9 \pm 25.3$	
Opinion on the number of residency student		
Sufficient	$87.4 \pm 24.0$	<b>0.010<sup>a</sup></b>
Partially sufficient	$79.0 \pm 26.3$	
Insufficient	$76.4 \pm 26.7$	
Opinion on the number of faculty members		
Sufficient	$91.6 \pm 26.6$	<b>&lt;0.001<sup>b</sup></b>
Partially sufficient	$83.9 \pm 23.1$	
Insufficient	$76.7 \pm 23.9$	
Participation in scientific research		
Yes	$92.4 \pm 24.4$	<b>&lt;0.001</b>
No	$75.0 \pm 23.1$	
Scientific congress participation		
Yes	$88.7 \pm 24.9$	<b>0.001</b>
No	$78.0 \pm 24.5$	
Duration of seminars		
Four times a month or more	$90.5 \pm 23.8$	<b>0.024<sup>c</sup></b>
Two or three times a month	$81.6 \pm 23.8$	
Once a month	$87.0 \pm 33.0$	
Rarer	$84.0 \pm 20.3$	
None	$74.8 \pm 27.7$	
Seminars' time		
Lunchtime	$86.3 \pm 26.6$	<b>&lt;0.001<sup>d</sup></b>
Out of working hours	$73.1 \pm 24.3$	
Within working hours	$89.1 \pm 22.3$	
None	$74.8 \pm 27.7$	

\*One-way analysis of variance-post-hoc analyzes; a. difference between all groups (sufficient, partially sufficient, and insufficient groups); b. difference between all groups (sufficient, partially sufficient, and insufficient groups); c. difference between four times a month or more and two or three times a month - difference between four times a month or more and none. d. difference between lunchtime and out of working hours, none - difference between four times a month or more and none. d. difference between within working hours and out of working hours, none

52.3% (n=139) of the residency students evaluated the education environment as more positive than

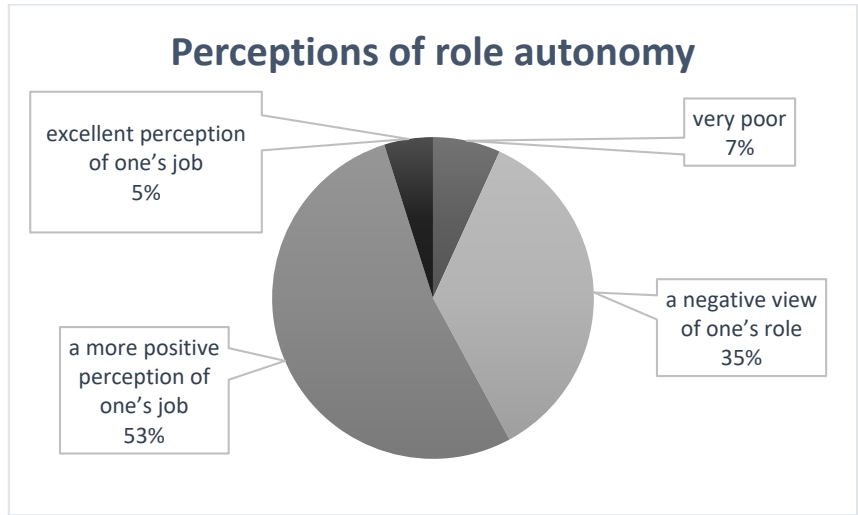
negative, but room for improvement. Evaluation of the overall PHEEM score is shown in Graph 1.



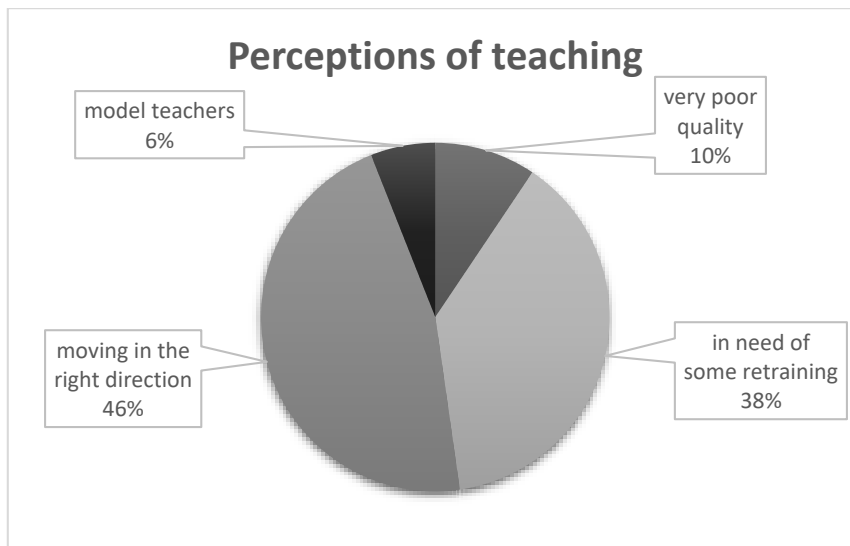
**Graph 1.** Evaluation of the overall PHEEM score

The participants' mean autonomy sub-scale score is  $29.1 \pm 8.8$  (a more positive perception of one's job), the teaching sub-scale mean score is  $30.1 \pm 10.1$  (in need of some retraining), and the social support sub-scale score is  $27.1 \pm 7.1$  (more pros than cons). No significant differences were found between the sub-scale scores of the students in medical and surgical sciences

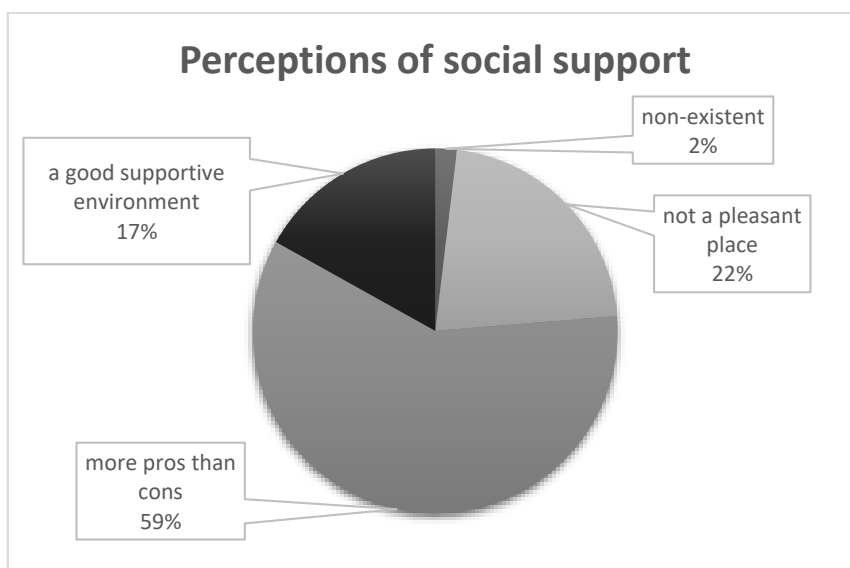
( $p > 0.05$ ). Social support subscale score was found to be significantly higher in males ( $28.3 \pm 6.6$ ) than females ( $26.5 \pm 7.0$ ) ( $p = 0.044$ ). Other sub-scale scores did not differ according to gender ( $p > 0.05$ ). The interpretation of the scores given to the subscales by the participants is shown in Graph 2, Graph 3, and Graph 4.



**Graph 2.** Perceptions of role autonomy



Graph 3. Perceptions of teaching



Graph 4. Perceptions of social support

## Discussion

Most of the specialty students participated in the research. The most striking results of our research; Most of both medical science and surgical science residency students do not receive orientation training, many of them do not know about TUKMOS, which organizes their training, about half of them participate in pre-thesis scientific research, more than half of them attend scientific congresses, and 15% of them do not have seminar hours. Seminar hours, on the other hand, differ between surgical and medical science, and it is noteworthy that seminar hours are conducted during lunch breaks and outside of working hours. Those who think that the number of assistants and faculty members are sufficient have more positive perceptions of the educational environment. We found that the scientific research and congress participants had more positive perceptions of the educational environment compared to the others. Conducting seminars four or more times a month and conducting seminars during

working hours also had a positive effect on the PHEEM score.

When we examine the studies conducted in our country on this subject, it is seen that the most comprehensive research on the training of specialty students is the "Report on Specialization in Medicine" published by the Turkish Medical Association in 2015.<sup>14</sup> A total of 1161 people participated in this research, 402 of whom were educated in a training and research hospital, 696 students from a state university, and 63 students from a foundation university. 67% of the participants in this study stated that their patient load was too high. It is seen that 41% of medical residency students do not participate in scientific research. 59% of them did not know about the specialty training core training program. While the rate of those who stated that the core training program was implemented in their clinics was 13% in total, it was 14.5% in universities. The rate of those who stated that resident training seminars were not held in their clinics was 45.8%. 64% of residency students did not find the time

allocated for training meetings sufficient. Only 33.3% of the participants in the study thought that the quality of the education provided in their institutions was sufficient.<sup>14</sup> In the study conducted by Atilgan et al.<sup>15</sup> on medical residency students at Hacettepe University, the PHEEM scale was used and the mean score of the students was found to be 82.2, similar to our study. This value is interpreted as more positive than negative. No significant difference was found between the perception of the educational environment and gender and age. Those educated in the internal branch were found to have a significantly more positive education perception than the surgical branch students. To improve the educational environment, students; They suggested improving the polyclinic conditions, conducting training visits and establishing training hours, increasing the number of research assistants, providing leave after the night shift, seeing the student as a colleague, not offending the student, and taking a more active role in education.<sup>15</sup> In a study conducted with forensic medicine residents of two universities, the mean PHEEM score was found to be 131.8, and the perception of the educational environment of female residency students was found to be more positive.<sup>16</sup> In the research of Yilmaz et al., half of the students think that the education they receive is good, but 38% of the participants think that specialty education in medicine should be improved. 62% of them stated that they could not receive a good article writing training during their specialization training.<sup>8</sup> In a study conducted with nationwide family medicine residents, 87% of the participants stated that educational activities such as article seminar hours were carried out regularly. Still, approximately one-third of them stated that theoretical education and practical training were not sufficient according to the standards. Even though most of the residents in this study chose their departments voluntarily, they were dissatisfied due to some difficulties they experienced in education and physical conditions.<sup>17,18</sup> In another nationwide study of family medicine residents using the PHEEM scale, the scale score average of the participants was found to be 89.9, and the scale score of those who said that the balance of education in the institution was better than the service was significantly higher. The perception of the educational environment was more positive in those who stated that they were supported in conducting scientific research.<sup>19</sup>

It is of great importance to evaluate the quality of the education provided to take corrective and remedial measures for education improvement. The selection of the tool we will use while making this evaluation is significant. It must be suitable for our own education system and its suitability for our language and culture must be proven by valid and reliable studies. Kurt Lewin's research in social psychology in the 1930s and 1940s laid the foundation for the development of tools to measure educational climates.<sup>1,20</sup> The necessity of developing educational measurement tools specific to

health professions was first mentioned by Genn and Harden.<sup>21</sup> There are various measurement tools used in the world in this regard. One of the most used, the Dundee Ready Educational Environment Measure (DREEM) is widely used to measure the undergraduate education environment. The scale used in our research, the Postgraduate Hospital Educational Environment Measure (PHEEM), one of the most widely used and validated instruments for post graduate medical education in the world.<sup>1,12</sup> PHEEM has been translated into many languages to assess different learning environments internationally. According to the results of a review examining the studies conducted with the PHEEM scale, no significant difference was found with the gender variable in almost all the studies in terms of scale scores. In the comparisons made according to the seniority of the residency students, it was found that the education perceptions of the young people were more positive than the seniors. Examining the interdisciplinary differences, it was noted that only three studies included learners from a few special education programs, in which most studies evaluated single education programs. It reported significant differences in total and subscale PHEEM scores for different programs. In a study involving family medicine, emergency medicine, surgery, and internal medicine trainees, it was observed that family medicine trainees received the highest scores on perceived teaching, social support, and role autonomy.<sup>22</sup>

As a result, our findings are compatible with both our country and world literature. To excellent medical education, the quality of education should be evaluated, and remedial interventions should be made by making these evaluations at regular intervals. This research was conducted in a single center. However, it is valuable in terms of evaluating the opinions of residency students from all disciplines.

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