

Evaluation of the Prosthodontic Clinical Internship Experiences of 4th and 5th Grade Dentistry Students: A Cross-Sectional Study

4 ve 5. Sınıf Diş Hekimliği Öğrencilerinin Protetik Diş Tedavisi Klinik Stajı Deneyimlerinin Değerlendirilmesi: Kesitsel Araştırma

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ABSTRACT Objective: This study aims to evaluate the prosthodontic internship experiences of 4th and 5th grade dentistry students in terms of clinical procedures and patient-physician relationships. **Material and Methods:** A questionnaire consisting of a total of 26 closed and open-ended questions was created through Google Forms and shared with students' representatives of each grade. It included 5-point Likert scale to allow dentistry students to evaluate prosthodontic treatment procedures. A total of 143 dentistry students were included in the study. The data were statistically analyzed using the Pearson chi-square test and the Bonferroni-corrected Z-test. **Results:** Of the dentistry students, 58% were 4th graders, 42% were 5th graders, 63.6% reported to consider themselves sufficient when planning treatment, 50.4% reported to spend around 30 min-1 hour for a tooth preparation, 56.8% reported border moulding as the most challenging complete denture clinical procedure, and 77.5% reported to feel strongly responsible for patients whom they treat. In addition, there was no statistically significant difference between the students' perceptions of whether the treatment they applied was ideal according to their grades ($p=0.089$). **Conclusion:** In general, dentistry students have the most difficulty in tooth preparation among fixed prosthesis clinical procedures and in border moulding among total prosthesis clinical procedures. The 5th graders were more successful than the 4th graders in some clinical procedures that required correct use of time and dexterity.

ÖZET Amaç: Çalışmamızın amacı, üniversitemizdeki 4 ve 5. sınıf diş hekimliği öğrencilerinin protetik diş tedavisi staj deneyimlerini klinik işlemler ve hasta-hekim ilişkisi açısından değerlendirmektir. **Gereç ve Yöntemler:** Google Formlar üzerinden oluşturulan 26 soruluk anket, sınıf temsilcileriyle paylaşarak uygulanmıştır. Anket, protetik diş tedavisi işlemlerini değerlendirdikleri kapalı ve açık uçlu sorular ile 5 düzeyli Likert skalası ile değerlendirilen sorulardan oluşmaktadır. Çalışmaya 143 öğrenci dâhil edilmiştir. Elde edilen veriler Pearson ki-kare testi ve Bonferroni düzeltilmeli Z testi kullanılarak istatistiksel olarak analiz edilmiştir. **Bulgular:** Çalışmaya katılan öğrencilerin %58'i 4. sınıf, %42'si 5. sınıftır. Hastaya endikasyon koyarken kendimi yeterli buluyorum ifadesine en fazla verilen yanıt %63,6 ile "katılıyorum" yanıtı olmuştur. "Bir diş kesimi için ortalama ne kadar zaman harcıyorsunuz?" sorusuna en fazla verilen yanıt %50,4 ile "30 dk-1 saat" yanıtı olmuştur. Total protez klinik işlemlerinden sizi en çok zorlayanları "işaretleyiniz" ifadesine en fazla verilen yanıt %56,8 ile "kaşık kenarlarının stenç ile şekillendirilmesi" olmuştur. "Tedavisini üstlendiğim hastaya karşı sorumluluk duyuyorum" ifadesine en fazla verilen yanıt %77,5 ile "kesinlikle katılıyorum" yanıtı olmuştur. Öğrencilerin sınıflarına göre uyguladıkları tedavinin ideal olduğunu düşünme durumlarının dağılımları arasında istatistiksel olarak anlamlı bir farklılık bulunmamıştır ($p=0,089$). **Sonuç:** Öğrenciler genel olarak sabit protez klinik işlemlerinden en fazla diş preparasyonunda, total protez klinik işlemlerinden en fazla kaşık kenarlarının şekillendirilmesi (border moulding) işleminde zorlanmaktadır. Çalışmanın sonucunda, 5. sınıfların zamanı doğru kullanma ve el becerisi gerektiren bazı klinik işlemlerde 4. sınıflara göre daha başarılı oldukları görülmüştür.

Keywords: Dental students; internship and residency; prosthodontics

Anahtar Kelimeler: Diş hekimliği öğrencileri; intörlük ve asistanlık; prostodonti

Prosthetic dentistry is a branch of dentistry that aims to restore the function, aesthetics and phonation of dental patients by replacing their lost teeth and tis-

sues with various prostheses.¹ A successful prosthetic restoration can only be achieved with a correct diagnosis and treatment plan. Patient's biological sys-

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tems, prosthesis's mechanical design and the physical compatibility of dental materials play a key role in the success of prosthetic dental treatment.²

Both 4th and 5th grade dentistry students do internships for 8 weeks to gain competence in prosthetic dentistry. During this internship period, dentistry students perform fixed and removable prosthesis (complete and partial dentures). The threshold score is one fixed partial prosthesis, one crown prosthesis, one lower or upper complete dentures and one lower or upper partial dentures for 4th grade dentistry students and 2 fixed partial prostheses, 4 crown prostheses, 4 upper/lower complete dentures and 4 upper/lower partial dentures for those in the 5th grade.

Dentistry students can have difficulty in learning prosthodontic treatment procedures due to several reasons such as excess number of treatment sessions and a need for cooperation with dental technicians, causing stress on both dental patients and dentistry students.^{3,4} It is important for dentistry students to be aware that such situations are also a part of dental education and practice, and to gain the ability to solve problems in such situations.⁵

Clinical settings allow dentistry students to increase their experience, practical skills and speed.⁶ Dentistry students take the first step towards becoming a competent dentist during internships. In addition, clinical education is an important method for measuring their learning and experience.⁷

Dentistry students do their internships together with doctoral students (assistants) of the department of prosthodontics. All dental processes are subject to the approval of dental assistants and responsible lecturers, respectively. Dentistry students benefit from knowledge and skills of both assistants and faculty members regarding making dental prosthesis thus they increase their theoretical and practical knowledge.^{8,9}

This study aims to determine the skills of 4th and 5th grade dentistry students in treatment planning and X-ray evaluation and the procedures they have difficulty in clinical and laboratory construction of fixed and removable dentures. In addition, the present study includes self-assessments about how much work dentistry students could do in a single treatment

session, whether they could solve problems they had in dental try-ins with their own competencies, and how they could communicate with patients, perform an anxious patient management, use time correctly and strengthen patient-physician relationships.

MATERIAL AND METHODS

This study was conducted in line with the principles of Helsinki Declaration. For conducting the study, an approval (date: June 17, 2022, number: 16/2) was obtained from the Hamidiye Scientific Research Ethics Committee. Participation in the study was on a voluntary basis. A total of 143 dentistry students, including 83 from 4th graders and 60 from 5th graders, who completed their prosthodontic internship at University of Health Sciences, Faculty of Dentistry, were included in the study. To evaluate their clinical internship experiences, a 26-question survey form was created via Google Forms, and the survey link was shared with the class representatives. An informed consent question was added to the electronic survey and each participant agreed to participate in the survey.

The form included 5-point Likert type questions, which could be answered as “*totally disagree, disagree, undecided, agree and totally agree*”, to evaluate several subjects such as whether the students considered themselves sufficient while planning treatment, evaluating X-rays, choosing right shade of porcelain and making metal-dentin try-ins. In addition, it contained closed-ended questions about the most difficult procedures among clinical and laboratory procedures for fixed and removable dentures, how long it took to complete tooth preparation and impression taking, and the failures they had in dental try-in procedures. Moreover, the form consisted of comprehensive questions about the ideal treatment approach, patient-physician communication, and anxious patient management. The students' opinions on the subject were also received using open-ended questions.

STATISTICAL ANALYSIS

The data were analyzed using the IBM SPSS V23 (NY, USA). Pearson chi-square test was used to compare categorical data according to students' grades,

and multiple comparisons were made with Bonferoni corrected Z-test. Analysis results were presented in frequency and percentage. Significance level was considered $p < 0.050$.

RESULTS

Table 1 presents the distribution of dentistry students' responses to questions using frequency (n) and percentage (%).

As seen in Table 2, a statistically significant difference was found between the distribution of the students' responses to the statement "*Only in one session, I can make border molding and take the impressions of both lower and upper jaws with zinc oxide eugenol*" according to their grades ($p=0.035$). Here, the difference was observed among those who responded "*sometimes*" and those who responded "*always*". The rate of those who responded "*sometimes*" was 36.6% in 4th graders and 18.3% in 5th graders. The rate of those who responded "*always*" was 6.1% in 4th graders and 16.7% in 5th graders. A statistically significant difference was also found between the distribution of the students' responses to the statement "*I can complete the preparation of a 3-unit fixed partial prosthesis and take impressions in a single session*" according to their grades ($p=0.007$). Here, the difference was observed between those who responded "*never*". The rate of those who responded "*never*" was 41% in 4th graders and 15% in 5th graders. In addition, a statistically significant difference was found between the distribution of the students' responses to the statement "*I think I can fully plan removable partial dentures*" ($p=0.004$). Here, the difference was observed among those who responded "*undecided*", "*agree*" and "*totally agree*". The rate of those who responded "*undecided*" was 44.6% in 4th graders and 22% in 5th graders. The rate of those who responded "*agree*" was 36.1% in 4th graders and 57.6% in 5th graders. The rate of those who responded "*totally agree*" was 4.8% in 4th graders and 15.3% in 5th graders.

A statistically significant difference was found between the distribution of the students' responses to the statement "*Before I examine a patient, I do research in advance to increase my knowledge about the procedures I will apply*" according to their grades

TABLE 1: Frequency distribution of questions.

	Frequency (n)	Percentage (%)
Grade		
4 th grade	83	58
5 th grade	60	42
Internship group		
1 st group	27	18.9
2 nd group	25	17.5
3 rd group	26	18.2
4 th group	30	21
5 th group	35	24.5
I find myself sufficient while planning treatment		
Undecided	31	21.7
Agree	89	62.2
Disagree	7	4.9
Totally agree	14	9.8
Totally disagree	2	1.4
I find myself sufficient when evaluating panoramic X-rays		
Undecided	26	18.2
Agree	91	63.6
Disagree	6	4.2
Totally agree	20	14
Only in one session, I can make border molding and take impressions of both lower and upper jaws with zinc oxide eugenol		
Sometimes	41	28.9
Often	58	40.8
Always	15	10.6
Never	28	19.7
How much time do you spend on average for a tooth preparation?		
1-2 hours	15	10.6
30 min	55	39
30 min-1 hour	71	50.4
I can complete the preparation of a 3-unit fixed partial prosthesis and take impressions in a single session		
Sometimes	60	42
Often	34	23.8
Always	6	4.2
Never	43	30.1
I know which factors to consider during metal and dentin try-ins		
Undecided	19	13.3
Agree	97	67.8
Disagree	2	1.4
Totally agree	25	17.5
I have difficulty in selecting right shade		
Undecided	19	13.4
Agree	15	10.6
Disagree	79	55.6
Totally agree	1	0.7
Totally disagree	28	19.7
I can solve the problems I encounter in metal and dentin try-ins by myself		
Undecided	75	53.6
Agree	39	27.9
Disagree	20	14.3
Totally agree	4	2.9
Totally disagree	2	1.4

TABLE 1: Frequency distribution of questions (*devamı*).

	Frequency (n)	Percentage (%)
I think I can fully plan removable partial dentures		
Undecided	50	35.2
Agree	64	45.1
Disagree	14	9.9
Totally agree	13	9.2
Totally disagree	1	0.7
Before I examine a patient, I do research in advance to increase my knowledge about the procedures I will apply		
Sometimes	11	7.8
Often	62	44
Always	67	47.5
Never	1	0.7
How do you evaluate the internship score threshold?		
Low	16	11.3
High	30	21.3
Sufficient	95	67.4
I have a responsibility to the patient whose treatment I undertake		
Undecided	2	1.4
Agree	30	21.1
Totally agree	110	77.5
The fact that the patient is anxious before and during the procedure causes me to be anxious		
Undecided	30	21.1
Agree	49	34.5
Disagree	39	27.5
Totally agree	14	9.9
Totally disagree	10	7
I know how to treat an anxious patient		
Undecided	32	22.5
Agree	90	63.4
Disagree	5	3.5
Totally agree	15	10.6
I have difficulty in communicating with the patient		
Undecided	15	10.6
Agree	4	2.8
Disagree	87	61.3
Totally disagree	36	25.4
I know what I need to do to communicate better with the patient		
Yes	128	90.1
No	14	9.9
I use the time correctly when examining a patient		
Undecided	38	26.8
Agree	77	54.2
Disagree	9	6.3
Totally agree	18	12.7

TABLE 1: Frequency distribution of questions (*devamı*).

	Frequency (n)	Percentage (%)
Please mark the most challenging fixed denture clinical procedures*		
Tooth preparation	92	64.8
Cast post impression	26	18.3
Making temporary crowns	46	32.4
Removing fixed partial prosthesis	21	14.8
Metal and dentin try-ins	22	15.5
Bite registration with wax	17	12
Selecting the right shade	5	3.5
Placing retraction cords	23	16.2
Taking impression with silicone	31	21.8
Cementation	6	4.2
Please mark the most challenging complete denture clinical procedure*		
Taking impression with alginate	14	10.1
Taking impression with zinc oxide eugenol	21	15.1
Determination of vertical dimension	51	36.7
Denture try-in	37	26.6
Interocclusal recording	25	18
Border moulding	79	56.8
Please mark the most challenging complete denture laboratory procedure*		
Pouring of cast	3	2.3
Making custom tray	8	6
Setting teeth and waxing up	111	83.5
Finishing and polishing denture	15	11.3
Making denture base plates	15	11.3
Occlusal rim preparation	25	18.8
What is the most difficult stage in tooth preparation?*		
Preparation with finish lines	45	32.1
Not harming the gums	33	23.6
Preparation with absence of undercut	70	50
Forming ideal taper angle	20	14.3
Incisal/occlusal reduction	8	5.7
Ensuring parallelism of teeth while preparing fixed partial prosthesis	50	35.7
Cingulum/tubercle preparation	45	32.1
What is your most common failure in metal try-in?*		
Unbalance in fixed partial prosthesis	43	32.8
Rotation of crown prosthesis	8	6.1
Opening at marginal edge	52	39.7
Metal pressing on gingiva	38	29
Not enough distance for porcelain	56	42.7
What is your most common failure in dentin try-in?*		
Aesthetic issues	26	19.5
Difficult fit of the prosthesis due to excess porcelain in proximal parts	34	25.6
Premature occlusal contacts	97	72.9
Shade mismatch	15	11.3
What is the most challenging part in removable partial denture planning?*		
Selection of the main connector	31	23.5
Identifying direct retainers	31	23.5
Identifying indirect retainers	50	37.9
Placement of minor connectors	26	19.7
Evaluation of guide planes	37	28
Identifying rest and supports (tooth and tissue)	39	29.5

* Multiple response.

TABLE 2: Comparison of the students' responses to questions by grade.

	Grade		Test statistic	p*
	4 th grade n (%)	5 th grade n (%)		
I find myself sufficient while planning treatment				
Undecided	20 (24.1)	11 (18.3)	3.327	0.505
Agree	51 (61.4)	38 (63.3)		
Disagree	4 (4.8)	3 (5)		
Totally agree	6 (7.2)	8 (13.3)		
Totally disagree	2 (2.4)	0 (0)		
I find myself sufficient when evaluating panoramic X-rays				
Undecided	19 (22.9)	7 (11.7)	8.805	0.051
Agree	49 (59)	42 (70)		
Disagree	6 (7.2)	0 (0)		
Totally agree	9 (10.8)	11 (18.3)		
Totally disagree	0 (0)	0 (0)		
Only in one session. I can make border moulding and take impressions of both lower and upper jaws with zinc oxide eugenol				
Sometimes	30 (36.6) ^b	11 (18.3) ^a	8.625	0.035
Often	30 (36.6)	28 (46.7)		
Always	5 (6.1) ^b	10 (16.7) ^a		
Never	17 (20.7)	11 (18.3)		
How much time do you spend on average for a tooth preparation?				
1-2 hours	8 (9.8)	7 (11.9)	2.614	0.271
30 min	28 (34.1)	27 (45.8)		
30 min-1 hour	46 (56.1)	25 (42.4)		
I can complete the preparation of a 3-unit fixed partial prosthesis and take impressions in a single session				
Sometimes	31 (37.3)	29 (48.3)	11.997	0.007
Often	16 (19.3)	18 (30)		
Always	2 (2.4)	4 (6.7)		
Never	34 (41) ^b	9 (15) ^a		
I know which factors to consider during metal and dentin try-ins				
Undecided	13 (15.7)	6 (10)	2.553	0.466
Agree	54 (65.1)	43 (71.7)		
Disagree	2 (2.4)	0 (0)		
Totally agree	14 (16.9)	11 (18.3)		
Totally disagree	0 (0)	0 (0)		
I have difficulty in choosing right shade				
Undecided	11 (13.4)	8 (13.3)	6.303	0.178
Agree	5 (6.1)	10 (16.7)		
Disagree	47 (57.3)	32 (53.3)		
Totally agree	0 (0)	1 (1.7)		
Totally disagree	19 (23.2)	9 (15)		
I can solve the problems I encounter in metal and dentin try-ins by myself				
Undecided	50 (61.7)	25 (42.4)	7.108	0.130
Agree	16 (19.8)	23 (39)		
Disagree	12 (14.8)	8 (13.6)		
Totally agree	2 (2.5)	2 (3.4)		
Totally disagree	1 (1.2)	1 (1.7)		
I think I can fully plan removable partial dentures				
Undecided	37 (44.6) ^b	13 (22) ^a	15.655	0.004
Agree	30 (36.1) ^b	34 (57.6) ^a		
Disagree	11 (13.3)	3 (5.1)		
Totally agree	4 (4.8) ^b	9 (15.3) ^a		
Totally disagree	1 (1.2)	0 (0)		

TABLE 2: Comparison of the students' responses to questions by grade (*devamı*).

	Grade		Test statistic	p*
	4 th grade n (%)	5 th grade n (%)		
Before I examine a patient, I do research in advance to increase my knowledge about the procedures I will apply				
Sometimes	6 (7.2)	5 (8.6)	7.85	0.049
Often	30 (36.1) ^b	32 (55.2) ^a		
Always	47 (56.6) ^b	20 (34.5) ^a		
Never	0 (0)	1 (1.7)		
How do you evaluate the internship score threshold?				
Low	13 (15.9) ^b	3 (5.1) ^a	28.041	<0.001
High	5 (6.1) ^b	25 (42.4) ^a		
Sufficient	64 (78) ^b	31 (52.5) ^a		
I have a responsibility to the patient whose treatment I undertake				
Undecided	1 (1.2)	1 (1.7)	0.092	0.955
Agree	18 (21.7)	12 (20.3)		
Disagree	0 (0)	0 (0)		
Totally agree	64 (77.1)	46 (78)		
Totally disagree	0 (0)	0 (0)		
The fact that the patient is anxious before and during the procedure causes me to be anxious				
Undecided	15 (18.1)	15 (25.4)	4.39	0.356
Agree	27 (32.5)	22 (37.3)		
Disagree	28 (33.7)	11 (18.6)		
Totally agree	7 (8.4)	7 (11.9)		
Totally disagree	6 (7.2)	4 (6.8)		
I know how to treat an anxious patient				
Undecided	19 (22.9)	13 (22)	1.695	0.638
Agree	50 (60.2)	40 (67.8)		
Disagree	4 (4.8)	1 (1.7)		
Totally agree	10 (12)	5 (8.5)		
Totally disagree	0 (0)	0 (0)		
I have difficulty in communicating with the patient				
Undecided	9 (10.8)	6 (10.2)	1.289	0.732
Agree	3 (3.6)	1 (1.7)		
Disagree	48 (57.8)	39 (66.1)		
Totally agree	0 (0)	0 (0)		
Totally disagree	23 (27.7)	13 (22)		
I know what I need to do to communicate better with the patient				
Yes	74 (89.2)	54 (91.5)	0.218	0.641
No	9 (10.8)	5 (8.5)		
I use the time correctly when examining a patient				
Undecided	23 (27.7)	15 (25.4)	4.198	0.241
Agree	40 (48.2)	37 (62.7)		
Disagree	7 (8.4)	2 (3.4)		
Totally agree	13 (15.7)	5 (8.5)		
What is your most common failure in metal try-in?*				
Unbalance in fixed partial prosthesis	23 (31.9)	20 (33.9)	3.526	0.619
Rotation of crown prosthesis	5 (6.9)	3 (5.1)		
Opening at marginal edge	29 (40.3)	23 (39)		
Metal pressing on gingiva	24 (33.3)	14 (23.7)		
Not enough distance for porcelain	27 (37.5)	29 (49.2)		
What is your most common failure in dentin try-in?				
Aesthetic issues	14 (18.4)	12 (21.1)	2.011	0.734
Difficult fit of the prosthesis due to excess porcelain in proximal parts	19 (25)	15 (26.3)		
Premature occlusal contacts	55 (72.4)	42 (73.7)		
Shade mismatch	11 (14.5)	4 (7)		

TABLE 2: Comparison of the students' responses to questions by grade (*devamı*).

	Grade		Test statistic	p*
	4 th grade n (%)	5 th grade n (%)		
What is the most challenging part in removable partial denture planning?				
Selection of the main connector	16 (21.3)	15 (26.3)	15.542	0.016
Identifying direct retainers	22 (29.3)	9 (15.8)		
Identifying indirect retainers	32 (42.7)	18 (31.6)		
Placement of minor connectors	21 (28) ^b	5 (8.8) ^a		
Evaluation of guide planes	25 (33.3)	12 (21.1)		
Identifying rest and supports (tooth and tissue)	23 (30.7)	16 (28.1)		
Please mark the most challenging fixed denture clinical procedures				
Tooth preparation	59 (71.1)	33 (55.9)	17.505	0.064
Cast post impression	15 (18.1)	11 (18.6)		
Making temporary crowns	19 (22.9)	27 (45.8)		
Removing fixed partial prosthesis	16 (19.3)	5 (8.5)		
Metal and dentin try-ins	12 (14.5)	10 (16.9)		
Bite registration with wax	10 (12)	7 (11.9)		
Selecting dental shade	3 (3.6)	2 (3.4)		
Placing retraction cords	14 (16.9)	9 (15.3)		
Taking impression with silicone	16 (19.3)	15 (25.4)		
Cementation	5 (6)	1 (1.7)		
Please mark the most challenging total prosthesis clinical procedure				
Taking impression with alginate	11 (13.3)	3 (5.4)	11.684	0.069
Taking impression with zinc oxide eugenol	12 (14.5)	9 (16.1)		
Determination of vertical dimension	37 (44.6)	14 (25)		
Denture try-in	26 (31.3)	11 (19.6)		
Interocclusal recording	16 (19.3)	9 (16.1)		
Border molding	44 (53)	35 (62.5)		
Please mark the most challenging total prosthesis laboratory procedure				
Pouring of cast	2 (2.6)	1 (1.8)	4.245	0.643
Making custom tray	6 (7.8)	2 (3.6)		
Setting and waxing up of teeth	67 (87)	44 (78.6)		
Finishing and polishing of denture	7 (9.1)	8 (14.3)		
Denture base plate preparation	10 (13)	5 (8.9)		
Occlusal rim fabrication	14 (18.2)	11 (19.6)		
What is the most difficult stage in tooth preparation?				
Preparation with finish lines	27 (32.9)	18 (31)	25.964	0.001
Not harming the gums	24 (29.3)	9 (15.5)		
Preparation with absence of undercut	33 (40.2) ^b	37 (63.8) ^a		
Forming ideal taper angle	17 (20.7) ^b	3 (5.2) ^a		
Incisal/occlusal reduction	6 (7.3)	2 (3.4)		
Ensuring parallelism of teeth while preparing fixed partial prosthesis	34 (41.5)	16 (27.6)		
Cingulum/tubercle preparation	32 (39) ^b	13 (22.4) ^a		

*Pearson chi-square test; a-b: There is no difference between groups with the same letter.

($p=0.049$). Here, the difference was observed between those who responded “often” and those who responded “always”. The rate of those who responded “often” was 36.1% in 4th graders and 55.2% in 5th graders. The rate of those who responded “always”

was 56.6% in 4th graders and 34.5% in 5th graders. A statistically significant difference was also found between the distribution of the students' responses to the statement “How do you evaluate the internship score threshold?” according to their grades

($p < 0.001$). The rate of those who responded “low” was 15.9% in 4th graders and 5.1% in 5th graders. The rate of those who responded “high” was 6.1% in 4th graders and 42.4% in 5th graders. The rate of those who responded “sufficient” was 78% in 4th graders and 52.5% in 5th graders. In addition, a statistically significant difference was found between the distribution of the students’ responses to the statement “What is the most challenging part in removable partial denture planning?” according to their grades ($p = 0.016$). Here, the difference was observed among those who responded “placement of minor connectors”. The rate of those who responded “placement of minor connectors” was 28% in 4th graders and 8.8% in 5th graders. The rate of those who responded “always” was 56.6% in 4th graders and 34.5% in 5th graders. A statistically significant difference was found between the distribution of the students’ responses to the statement “What is the most difficult stage in tooth preparation?” ($p = 0.001$). Here, the difference was observed among those who responded “preparation with absence of undercut”, “forming ideal taper angle” and “cingulum/tubercle preparation”. The rate of those who responded “preparation with absence of undercut” was 40.2% in 4th graders and 63.8% in 5th graders. The rate of those who re-

sponded “forming ideal taper angle” was 20.7% in 4th graders and 5.2% in 5th graders. The rate of those who responded “cingulum/tubercle preparation” was 39% in 4th graders and 22.7% in 5th graders.

No statistically significant difference was found between the students’ perceptions of whether the treatment they applied was ideal according to their grades ($p = 0.089$). The rate of those who considered the treatment they applied was ideal was 78.31% in 4th graders and 71.6% in 5th graders (Table 3).

Table 4 reveals that no statistically significant difference was found between the students’ perceptions of what could be done to ensure the ideal patient-physician relationship and to have correct time management ($p = 0.709$). The rate of those who responded “to increase practical skills by examining more patients” was 79% in 4th graders and 78% in 5th graders. The rate of those who responded “to empathize with patients” was 40.7% in 4th graders and 52.5% in 5th graders. The rate of those who responded “to attend seminars and courses on the subject” was 45.7% in 4th graders and 47.5% in 5th graders. The rate of those who responded “to strengthen theoretical knowledge” was 45.7% in 4th graders and 49.2% in 5th graders.

TABLE 3: Comparison of the distributions of the students’ perceptions of whether the treatment they applied was ideal according to their grades.

	Grade		Totaln (%)	Test statistic	p value
	4 th grade n (%)	5 th grade n (%)			
I think the treatment I applied was ideal					
Yes	69 (87.3)	44 (74.6)	113 (81.9)	2.9	0.089
No	10 (12.7)	15 (25.4)	25 (18.1)		

Yates’s correction.

TABLE 4: Comparison of the distributions of the students’ perceptions of what could be done to ensure the ideal patient-physician relationship and to have correct time management according to their grades.

	4 th grade n (%)	5 th grade n (%)	Total n (%)	Test statistic	p value
What can be done to ensure the ideal patient-physician relationship and to have correct time management?*					
To increase practical skills by examining more patients	64 (79)	46 (78)	110 (78.6)	2.147	0.709
To empathize with patients	33 (40.7)	31 (52.5)	64 (45.7)		
To attend seminars and courses on the subject	37 (45.7)	28 (47.5)	65 (46.4)		
To strengthen theoretical knowledge	37 (45.7)	29 (49.2)	66 (47.1)		

Pearson chi-square test; frequency (percentage) *Multiple responses.

DISCUSSION

In the clinical internship training of prosthetic dentistry, dentistry students confidently gain experience in patient management under the supervision of responsible lecturers and doctoral students. In addition to factors such as long clinical procedures, complex laboratory processes and high number of treatment sessions, the necessity of completing the internship on time can create stress for dentistry students. Despite all these challenging processes, dentistry students can complete their prosthetic internships by arranging their patients' sessions properly, learning to use time correctly and communicating effectively with their patients.

The rate of those who reported that only in one session, they could always make border molding and take impressions of both lower and upper jaws with zinc oxide eugenol was 6.1% in 4th graders and 16.7% in 5th graders; whereby there was a statistically a significant difference between the 4th and 5th graders. This result suggests that 5th graders are better in terms of using time correctly and manual dexterity. In addition, 45.8% of the 5th graders reported to prepare a tooth in 30 min, while 56.1% of the 4th graders reported to prepare a tooth in 30 min-1 hour. No significant difference was found between the 5th and 4th graders in terms of tooth preparation time. This result may be because of several factors such as type and place of prepared tooth and mouth opening.

In a dental clinic, it is a routine procedure to prepare and take impressions of teeth for a 3-unit fixed partial prosthesis in one single session. Therefore, we wanted to measure this competence of dentistry students and asked them whether they could complete the preparation of a 3-unit fixed partial prosthesis and take impressions in one single session. The rate of those who reported that they could not completely perform the operations was 41% in 4th graders and 15% in 5th graders. A statistically significant difference was found between the students who responded "never" in both grades. This result suggests that 5th graders have more dentistry practical skills in time management and dexterity than 4th graders.

The current study found that both 4th and 5th graders had knowledge about the factors that should

be evaluated during metal and dentin try-ins, while there was no significant difference between those who responded "undecided" to the statement "I can solve the problems I encounter in metal and dentin try-in by myself" according to grades. This result reveals that 5th graders need doctorate students (assistants) during clinical internships.

Considering the most challenging fixed prosthesis clinical procedures, 64.8% of the students reported tooth preparation as the most challenging fixed prosthesis clinical procedure, followed by 32.4% for temporary crown making. Dikeç et al. examined the effect of video-assisted education on the stress level felt by dentistry students during fixed prosthetic dental treatment and reported that dentistry students felt most stressed during dentin try-in procedures.¹⁰ The authors considered this to be because the denture would be delivered to the patient.

A correct planning on the diagnostic models before the construction of removable partial dentures (RPD) is a crucial step to provide stability and retention in the partial denture. RPDs can complicate treatment planning because they are supported by tissues with different resilience and have various components with distinct functions.¹¹ In the clinic, dentistry students discuss denture planning with assistants using a denture model to produce infrastructure cast in the laboratory, and the planning must be approved by assistants. The rate of those who reported that they could do the planning completely was 40.9% in 4th graders and 72.9% in 5th graders. A significant difference was found between the grades. The complexity and open-ended nature of RPD planning and the different perspectives of faculty members on denture planning also cause difficulties for dentistry students to acquire skills in this regard. Similar to the present study, Batak et al. evaluated the RPD planning skills of undergraduate dentistry students and found that the students had most difficulty in placing indirect retainers during denture planning.¹² There are other studies about the deficiencies in the planning of RPDs and communication with dental technicians during dentistry education.¹³⁻¹⁵ At this point, it can be suggested that dentistry students gain planning skills in various cases by making use of planning maps. In addition,

dentistry students should be encouraged to make proper decisions by referring to the opinion and experience of dental technicians when they have difficulty in denture planning.

Sampaio-Fernandes et al. evaluated dentistry students' self-confidence and perceived quality in prosthodontics education and asked both 4th and 5th grade dentistry students to choose one of the self-confidence scales, scoring from 1 to 5, to measure how confident they felt in complete and partial denture procedures.¹⁶ As the lowest level of self-confidence in complete denture clinical procedures, recording jaw relations was scored two (2) by 4th graders and three (3) by 5th graders. Taking functional impressions was scored (3) by both grades. In the current study, unlike this study, the most challenging clinical procedure of complete denture was specified as border molding by both grades, followed by determination of vertical dimension.

The present study determined that a higher number of 4th graders considered the treatment they applied was ideal than 5th graders. Although there was no significant difference between the 2 groups, the difference may be because of their diverse perceptions of clinical procedures or because 4th graders examine fewer patients and have fewer problems. The students stated that the reason why the treatment they applied was not ideal was often laboratory-based aesthetic issues. Performing metal-ceramic restorations in student internships can prevent the desired results, especially in anterior region aesthetics.

There are numerous studies about the clinical competencies and knowledge levels in dentistry students.^{12,17-20} In addition, there are studies in which dentistry students evaluated their own treatments.^{21,22} There are also some studies which evaluated educational perspectives and compared clinical educations.²³⁻²⁵ However, there is no study to evaluate the experience of prosthodontics internship in dentistry according to grades.

Dentistry is a profession in which both patients and physicians are in one-to-one contact.²⁶ Therefore, in addition to increasing theoretical knowledge, improving manipulation and gaining practicality, it is important for dentistry students and professionals to

strengthen communication skills.^{27,28} Physicians with high communication skills can easily identify problems and solve them.²⁹ Of the students who participated in this study, 86.7% reported to have no difficulty in communicating with patients. On the other hand, 74% reported to know how to treat anxious patients. These high figures may be because dentistry students are not allowed to work alone in the clinic, and they take care of patients under the control of doctoral students and have communication skills courses in their undergraduate education. Communication skills are related to the development of other adaptive skills such as critical thinking, problem solving, teamwork, leadership, and professional ethics and morals.⁴ It is important to develop communication skills, especially during faculty education where communication with patients is prominent.

In the present study, a higher number of 4th graders responded “always” to the statement “*Before I examine a patient, I do research in advance to increase my knowledge about the procedures I will apply*” than 5th graders. This result shows that 5th graders feel more self-confident than 4th graders. Although they increase their practical skills and gain experience, which can make them feel in the comfort zone, dentistry students should always improve their knowledge and follow up-to-date treatment methods.

According to the results of the current study, dentistry students think that they can increase their practical skills by examining more patients, having ideal patient-physician relationships and using treatment time correctly. This is highly related to increasing professional experience after graduation. However, to contribute to clinical dentistry education and to increase the number of cases examined by dentistry students, faculty members may increase the internship score threshold, especially for 4th graders.

The present study determined the prosthodontics procedures that dentistry students had more difficulties. Therefore, it would be appropriate for them to work on such procedures by receiving more support from faculty members and doctoral students. In the present study, the students had the opportunity to self-assess and develop their skills for patient-physician communication, anxious patient management and

using the session time correctly. Faculty of dentistry members should provide the necessary guidance and counseling to dentistry students in these matters.

The limitation of the study may be that students can give different answers in different moods while evaluating themselves. This study includes only the evaluations of 4th and 5th grades of a faculty of dentistry. In future studies, a comprehensive survey study could be conducted that includes all dental students in Türkiye doing clinical internships.

CONCLUSION

In this study, dentistry students had the most difficulty in tooth preparation among fixed denture clinical procedures, and border molding among complete denture clinical procedures. For them, identifying indirect retainers was the most difficult part in RPD planning.

The study found that the 5th graders were more successful than the 4th graders in some clinical procedures that required correct use of time and dexterity. Most of the 4th and 5th graders considered the treatment they applied was ideal, while those who considered that the treatment they applied was not ideal reported that was because of laboratory-based aesthetic issues.

In the study, dentistry students reported to have no difficulty in communicating with patients and to know how to treat an anxious patient. In addition, they considered that it was necessary to increase their practical skills by examining more patients, have ideal patient-physician relationships and ensure correct time management.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Bike Altan; **Design:** Bike Altan; **Control/Supervision:** Bike Altan, Şevki Çınar; **Data Collection and/or Processing:** Bike Altan, Şevki Çınar; **Analysis and/or Interpretation:** Bike Altan, Şevki Çınar; **Literature Review:** Bike Altan, Şevki Çınar; **Writing the Article:** Bike Altan; **Critical Review:** Bike Altan, Şevki Çınar; **References and Findings:** Bike Altan.

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