

ORIGINAL ARTICLE

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Evaluation of dental students' preferences for specialization in orthodontics and factors influencing their choices

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Abstract

This study aims to evaluate the perspectives of students at a state university faculty of dentistry regarding orthodontics as a specialty and the factors influencing their career preferences. This descriptive and cross-sectional study was conducted from 2025-2026 with 235 participants enrolled in the 3rd, 4th, and 5th years of a state university faculty of dentistry in Türkiye. Data were collected via an online questionnaire querying demographic characteristics, specialty preferences, and perceptions of disadvantages/needs in orthodontics. Among the 235 participating students, 54.9% were female and 44.3% were male. No statistically significant difference was found in gender distribution across grade levels ($p = .09$). "Interest in the specialty" and "financial gain" emerged as the most important criteria in specialty selection; the distribution of these criteria varied significantly by gender ($p = .004$). While 3rd-year students identified "quotas and competition" as the primary disadvantage of orthodontics, 5th-year students who have more clinical experience defined "long-term patient follow-up and clinical responsibility" as the main disadvantage. More than 90% of the students agreed that there will be a societal need for the orthodontics branch in the future. In terms of branch preference, orthodontics ranked at the top along with oral and maxillofacial surgery. Students continue to view orthodontics as a prestigious field vital to public health. As clinical experience increases, students' perceptions of the branch shift toward a more realistic and responsibility-based structure. Increasing case-based clinical orientations in the curriculum may help students establish a healthier balance between theoretical expectations and clinical realities in their specialty preferences.

Keywords: Dental education, career choice, orthodontics, dental students, motivation

Introduction

The undergraduate dental education process represents an arduous and highly paced period during which individuals develop both theoretical competence and complex clinical skills [1]. The acceleration of scientific data and the level of technological advancement have made the specialty-oriented approach a more dominant paradigm than general dentistry today [1]. Specialty education is of vital for increasing service quality and optimizing patient satisfaction in the diagnosis and treatment of specific and challenging clinical cases where general practices may fall short [1]. The process of specialization in dentistry in our country gained legal status under Law No. 6225, which came into effect in 2011 [2,3]. With this legal regulation, eight basic branches have been formalized: Orthodontics, Oral and Maxillofacial Surgery, Pediatric Dentistry (Pedodontics), Endodontics, Periodontology, Prosthodontics, Restorative Dentistry, and

Oral and Maxillofacial Radiology [1,4]. To receive training in these disciplines, candidates must demonstrate success in the Specialization Examination in Dentistry (DUS), a centralized selection exam [1,5].

Among these legally defined specialty areas, Orthodontics which focuses particularly on aesthetic and functional improvement is a branch of science based on irregularities in tooth alignment (malocclusions) and the growth and development of craniofacial structures [4,6]. Existing malocclusions can cause functional losses such as chewing and phonation, as well as psychosocial aesthetic concerns in individuals [4,6]. A review of the literature revealed that orthodontic specialties are more desirable than other departments are [2,7]. Furthermore, it has been noted that students perceive it as the branch with the highest financial return and social prestige [7,8]. Many parameters have been defined in branch selection, including financial gain, employment

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opportunities, personal interest and individual talent, professional status, and quality of life [1,5,9,10]. Other critical factors affecting in students’ specialty preferences are clinical observation and experiences during undergraduate education and the role-model effect of academicians [8,9,11].

Existing studies indicate that the desired specialty department may change as the student progresses through grade levels [2]. The gender factor also plays a significant role in department selection [12]. Women frequently gravitate toward pedodontics and orthodontics, whereas men tend to choose the surgery departments [12]. Although there is extensive research in the literature regarding the specialty preferences of dental students, the shift in specialty preferences alongside the increase in clinical experience and how the disadvantages of the orthodontics department are perceived by students have not been sufficiently examined.

The sociocultural structure and educational differences of faculty in different regions of Türkiye may affect students’ branch selection. The limited number of regional studies in the literature affects dental workforce planning. Furthermore, the lack of sufficient studies creates a deficiency in organizing educational policies according to local needs.

This study aims to examine the views of dental faculty students specializing in the department of orthodontics and the factors influencing this process. Within the scope of the study, parameters such as grade level and sex, the timing of the first encounter with orthodontics, clinical experience, the future necessity of orthodontics, economic expectations, and branch selection were analyzed. It is anticipated that the study data will provide guidance for improving strategies in specialty education.

Material and Methods

This survey study is cross-sectional and descriptive. Ethical approval was obtained from the Clinical Research Ethics Committee of Harran University (Decision no: HRÜ/26.02.97, Date: February 23, 2026). The study was conducted in accordance with the principles of the Declaration of Helsinki. Following official ethical approval, the online questionnaire was administered to the students and remained active for a 10 day period until the target sample size was reached.

The study sample consisted of 235 students continuing their education at a state university faculty of dentistry from 2025-2026. These students included 3rd, 4th, and 5th-year levels. The study was voluntary in nature. An informed consent text explaining the purpose of the study and stating that the data would be used only for scientific purposes was provided at the beginning of the survey form.

The survey used in our study was adapted from similar studies in the literature with permission for use [2]. New questions were added to the original survey form, and some modifications were

made in line with the purpose of our study. The survey was prepared in a multiple-choice format. Before application, a pilot test was conducted with a group of 10 students for clarity, and its final version was established on the basis of feedback. The survey form consisted of 16 questions concerning sociodemographic characteristics, specialty preferences, factors influencing specialty preferences, and perceptions of orthodontics. The questionnaire items were designed to assess distinct domains such as awareness, preference, perception, and career motivation through nominal categorical responses. Therefore, the calculation of Cronbach’s alpha for internal consistency was not considered methodologically appropriate.

Statistical analysis of the collected data was performed via the Python programming language (SciPy and Pandas libraries). Descriptive statistics are expressed as numbers (n) and percentages (%) for categorical variables. The Chi-square test was applied to evaluate the relationships between independent variables (gender and grade level) and the responses to the survey questions, as well as differences between groups. The statistical significance limit was accepted as $p < .05$ for all analyses. Post hoc pairwise comparisons were performed via Bonferroni correction where applicable.

A post hoc power analysis was conducted for the primary outcome variable based on the chi-square test results. With a sample size of $N = 233$, a 95% confidence level, 5% margin of error, and a significance level of $\alpha = 0.05$, the achieved statistical power ($1-\beta$) was 99.1% for gender comparisons (Cramér’s $v = 0.356$) and 99.0% for academic year comparisons (Cramér’s $v = 0.278$). These results indicate that the study had sufficient power to detect medium-to-large effect sizes.

To ensure gender equality in the research, data analysis and reporting were conducted in accordance with the Sex and Gender Equity in Research (SAGER) guidelines.

Results

The majority of the students participating in the study were women (54.9%) (Table 1). Third-year students participated most frequently in the survey (40.9%). No statistically significant difference was found in sex distribution according to grade level ($p = .09$).

Table 1. Gender distribution of the study participants

Gender	n	%
Male	104	44.3
Female	129	54.9
Prefer not to say	2	0.9

n: number of participants; %: percentage of total; Analysis was performed using the Chi-square test

Most students (69.3%) stated that they first learned about the orthodontics department during the preuniversity period. A

significant relationship was found between the timing of learning about the branch and the grade level ($p = .01$). Post hoc pairwise comparisons revealed that this difference was significant between 3rd- and 5th-year students ($p = .002$), whereas no significant differences were found between the other groups. Preuniversity acquaintance was at the highest level among third-year students (77.1%). The faculty member teaching the orthodontics course emerged as the factor that most influenced the perception of orthodontics (47.6%). The impact of this experience varies significantly according to grade level ($p = .001$). Post hoc analysis revealed significant differences between 3rd- and 4th-year students ($p = .008$) and between 3rd- and 5th-year students ($p < .001$), whereas no significant difference was found between 4th- and 5th-year students. In the upper classes, the impact of clinical experience increased (Figure 1) (Table 2).

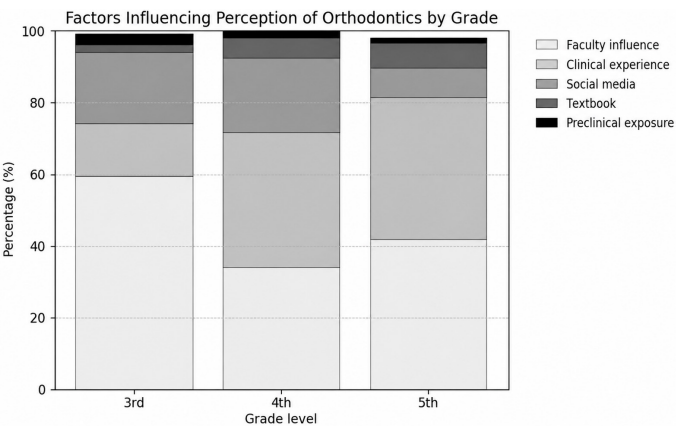


Figure 1. Distribution of the most influential factors shaping the perception of orthodontics among 3rd, 4th, and 5th-year dental students

Table 2. Distribution of participants' responses to the survey questions

Question	All n (%)	Female n (%)	Male n (%)	p	3rd grade n (%)	4th grade n (%)	5th grade n (%)	p
3. When did you first learn about the orthodontics department?				0.06				0.01
A. Before university	160 (69.3)	98 (63.6)	62 (67.4)		74 (77.1)	37 (69.8)	49 (57.6)	
B. During the university preference period	16 (6.9)	8 (5.2)	8 (8.7)		9 (9.4)	2 (3.8)	5 (5.9)	
C. During the preclinical period	50 (21.6)	20 (13.0)	30 (32.6)		12 (12.5)	11 (20.8)	27 (31.8)	
D. During the clinical period	6 (2.6)	3 (1.9)	3 (3.3)		0 (0.0)	3 (5.7)	3 (3.5)	
4. Which experience related to the orthodontics department affected you the most?				0.15				0.001
A. Faculty member teaching the orthodontics course	111 (47.6)	55 (42.6)	56 (53.8)		57 (59.4)	18 (34.0)	36 (41.9)	
B. Clinical experience	68 (29.2)	45 (34.9)	23 (22.1)		14 (14.6)	20 (37.7)	34 (39.5)	
C. Faculty journal / website / social media	37 (15.9)	22 (17.1)	15 (14.4)		19 (19.8)	11 (20.8)	7 (8.1)	
D. Textbook	11 (4.7)	4 (3.1)	7 (6.7)		2 (2.1)	3 (5.7)	6 (7.0)	
E. Preclinical course	5 (2.1)	3 (2.3)	2 (1.9)		3 (3.1)	1 (1.9)	1 (1.2)	
5. How would you evaluate this experience related to the orthodontics department?				0.97				0.12
A. Mostly positive	120 (51.5)	67 (51.9)	53 (51.0)		56 (58.3)	19 (35.8)	45 (52.3)	
B. Slightly positive	72 (30.9)	40 (31.0)	32 (30.8)		30 (31.3)	20 (37.7)	22 (25.6)	
C. Undecided	32 (13.7)	18 (14.0)	14 (13.5)		9 (9.4)	11 (20.8)	12 (14.0)	
D. Slightly negative	5 (2.1)	2 (1.6)	3 (2.9)		1 (1.0)	2 (3.8)	2 (2.3)	
E. Mostly negative	4 (1.7)	2 (1.6)	2 (1.9)		0 (0.0)	1 (1.9)	3 (3.5)	
6. Do you think the orthodontics department will be needed in the future?				0.12				0.11
A. I think it will be needed	203 (87.5)	118 (91.5)	85 (81.7)		82 (85.4)	42 (79.2)	79 (91.9)	
B. Undecided	23 (9.9)	9 (7.0)	14 (13.5)		10 (10.4)	9 (17.0)	4 (4.7)	
C. I do not think it will be needed	6 (2.6)	2 (1.6)	4 (3.8)		4 (4.2)	1 (1.9)	1 (1.2)	
7. What is the most important criterion you consider when choosing a specialty?				0.004				0.36
A. Interest in the specialty	102 (43.9)	67 (51.9)	35 (33.7)		39 (40.6)	24 (45.3)	39 (45.3)	
B. Job opportunities in the specialty	71 (30.6)	40 (31.0)	31 (29.8)		35 (36.5)	11 (20.8)	25 (29.1)	
C. Financial return of the specialty	44 (19.0)	17 (13.2)	27 (26.0)		14 (14.6)	14 (26.4)	16 (18.6)	
D. Faculty / city where specialty training will be received	16 (6.9)	5 (3.9)	11 (10.6)		8 (8.3)	4 (7.5)	4 (4.7)	

n = number of participants; % = percentage of total; Analysis was performed using the Chi-square test; Post hoc pairwise comparisons were conducted using Bonferroni correction (adjusted significance level: $p < 0.0167$); Significant pairwise differences are reported in the results section

Table 2. Distribution of participants' responses to the survey questions

Question	All n (%)	Female n (%)	Male n (%)	p	3rd grade n (%)	4th grade n (%)	5th grade n (%)	p
8. Which department is your first choice for specialty training?				< 0.001				0.001
A. Orthodontics	81 (34.9)	60 (46.5)	21 (20.2)		31 (32.3)	24 (45.3)	26 (30.2)	
B. Oral and maxillofacial surgery	77 (33.2)	33 (25.6)	44 (42.3)		27 (28.1)	19 (35.8)	31 (36.0)	
C. Prosthodontics	23 (9.9)	12 (9.3)	11 (10.6)		5 (5.2)	4 (7.5)	14 (16.3)	
D. Endodontics	16 (6.9)	4 (3.1)	12 (11.5)		12 (12.5)	1 (1.9)	3 (3.5)	
E. Periodontology	13 (5.6)	4 (3.1)	9 (8.7)		8 (8.3)	2 (3.8)	3 (3.5)	
F. Pediatric dentistry	8 (3.4)	7 (5.4)	1 (1.0)		1 (1.0)	2 (3.8)	5 (5.8)	
G. Restorative dentistry	9 (3.9)	6 (4.7)	3 (2.9)		9 (9.4)	0 (0.0)	0 (0.0)	
H. Oral and maxillofacial radiology	6 (2.6)	3 (2.3)	3 (2.9)		3 (3.1)	1 (1.9)	2 (2.3)	
9. Which department is your second choice for specialty training?				< 0.001				0.19
A. Orthodontics	75 (32.3)	36 (27.9)	39 (37.5)		33 (34.4)	13 (24.5)	29 (33.7)	
B. Oral and maxillofacial surgery	48 (20.7)	23 (17.8)	25 (24.0)		20 (20.8)	13 (24.5)	15 (17.4)	
C. Prosthodontics	26 (11.2)	15 (11.6)	11 (10.6)		8 (8.3)	3 (5.7)	15 (17.4)	
D. Periodontology	25 (10.8)	10 (7.8)	15 (14.4)		7 (7.3)	9 (17.0)	9 (10.5)	
E. Restorative dentistry	21 (9.1)	19 (14.7)	2 (1.9)		10 (10.4)	3 (5.7)	8 (9.3)	
F. Endodontics	15 (6.5)	11 (8.5)	4 (3.8)		7 (7.3)	6 (11.3)	2 (2.3)	
G. Pediatric dentistry	14 (6.0)	12 (9.3)	2 (1.9)		6 (6.3)	5 (9.4)	3 (3.5)	
H. Oral and maxillofacial radiology	9 (3.9)	3 (2.3)	6 (5.8)		5 (5.2)	1 (1.9)	3 (3.5)	
10. Which department is your third choice for specialty training?				0.04				0.004
A. Periodontology	48 (20.7)	29 (22.5)	19 (18.3)		10 (10.4)	19 (35.8)	19 (22.1)	
B. Orthodontics	38 (16.4)	21 (16.3)	17 (16.3)		16 (16.7)	6 (11.3)	16 (18.6)	
C. Prosthodontics	31 (13.4)	19 (14.7)	12 (11.5)		12 (12.5)	6 (11.3)	13 (15.1)	
D. Oral and maxillofacial surgery	30 (12.9)	15 (11.6)	15 (14.4)		11 (11.5)	8 (15.1)	11 (12.8)	
E. Endodontics	29 (12.5)	8 (6.2)	21 (20.2)		17 (17.7)	5 (9.4)	7 (8.1)	
F. Pediatric dentistry	28 (12.1)	19 (14.7)	9 (8.7)		10 (10.4)	6 (11.3)	12 (14.0)	
G. Restorative dentistry	22 (9.5)	12 (9.3)	10 (9.6)		17 (17.7)	3 (5.7)	2 (2.3)	
H. Oral and maxillofacial radiology	7 (3.0)	6 (4.7)	1 (1.0)		3 (3.1)	0 (0.0)	4 (4.7)	
11. In which specialty do you think you could earn more income?				0.13				0.002
A. Orthodontics	103 (44.4)	65 (50.4)	38 (36.5)		40 (41.7)	25 (47.2)	38 (44.2)	
B. Oral and maxillofacial surgery	84 (36.2)	38 (29.5)	46 (44.2)		45 (46.9)	18 (34.0)	21 (24.4)	
C. Prosthodontics	35 (15.1)	17 (13.2)	18 (17.3)		5 (5.2)	7 (13.2)	23 (26.7)	
D. Oral and maxillofacial radiology	4 (1.7)	3 (2.3)	1 (1.0)		3 (3.1)	1 (1.9)	0 (0.0)	
E. Pediatric dentistry	3 (1.3)	2 (1.6)	1 (1.0)		0 (0.0)	2 (3.8)	1 (1.2)	
F. Restorative dentistry	2 (0.9)	2 (1.6)	0 (0.0)		2 (2.1)	0 (0.0)	0 (0.0)	
G. Periodontology	1 (0.4)	1 (0.8)	0 (0.0)		1 (1.0)	0 (0.0)	0 (0.0)	
12. Which specialty do you think is more difficult?				0.17				0.32
A. Oral and maxillofacial surgery	165 (71.1)	95 (73.6)	70 (67.3)		70 (72.9)	39 (73.6)	56 (65.1)	
B. Endodontics	28 (12.1)	19 (14.7)	9 (8.7)		9 (9.4)	8 (15.1)	11 (12.8)	
C. Orthodontics	17 (7.3)	5 (3.9)	12 (11.5)		6 (6.3)	3 (5.7)	8 (9.3)	
D. Prosthodontics	7 (3.0)	2 (1.6)	5 (4.8)		3 (3.1)	1 (1.9)	3 (3.5)	
E. Pediatric dentistry	7 (3.0)	4 (3.1)	3 (2.9)		2 (2.1)	0 (0.0)	5 (5.8)	
F. Restorative dentistry	4 (1.7)	2 (1.6)	2 (1.9)		3 (3.1)	1 (1.9)	0 (0.0)	
G. Oral and maxillofacial radiology	3 (1.3)	2 (1.6)	1 (1.0)		3 (3.1)	0 (0.0)	0 (0.0)	
13. In which specialty do you think complications are more frequent?				0.28				0.09

n = number of participants; % = percentage of total; Analysis was performed using the Chi-square test; Post hoc pairwise comparisons were conducted using Bonferroni correction (adjusted significance level: $p < 0.0167$); Significant pairwise differences are reported in the results section

Table 2. Distribution of participants' responses to the survey questions

Question	All n (%)	Female n (%)	Male n (%)	p	3rd grade n (%)	4th grade n (%)	5th grade n (%)	p
A. Oral and maxillofacial surgery	173 (74.6)	95 (73.6)	78 (75.0)		62 (64.6)	41 (77.4)	70 (81.4)	
B. Endodontics	35 (15.1)	23 (17.8)	12 (11.5)		20 (20.8)	6 (11.3)	9 (10.5)	
C. Oral and maxillofacial radiology	7 (3.0)	5 (3.9)	2 (1.9)		5 (5.2)	2 (3.8)	0 (0.0)	
D. Orthodontics	7 (3.0)	2 (1.6)	5 (4.8)		4 (4.2)	1 (1.9)	2 (2.3)	
E. Prosthodontics	5 (2.2)	2 (1.6)	3 (2.9)		0 (0.0)	2 (3.8)	3 (3.5)	
F. Periodontology	3 (1.3)	2 (1.6)	1 (1.0)		3 (3.1)	0 (0.0)	0 (0.0)	
G. Pediatric dentistry	2 (0.9)	0 (0.0)	2 (1.9)		1 (1.0)	1 (1.9)	0 (0.0)	
H. Restorative dentistry	1 (0.4)	0 (0.0)	1 (1.0)		1 (1.0)	0 (0.0)	0 (0.0)	
14. Which specialty do you think is the most important for dentistry?				0.55				0.002
A. Oral and maxillofacial surgery	125 (53.9)	68 (52.7)	57 (54.8)		51 (53.1)	34 (64.2)	40 (46.5)	
B. Oral and maxillofacial radiology	32 (13.8)	20 (15.5)	12 (11.5)		15 (15.6)	9 (17.0)	8 (9.3)	
C. Endodontics	29 (12.5)	14 (10.9)	15 (14.4)		20 (20.8)	4 (7.5)	5 (5.8)	
D. Orthodontics	14 (6.0)	10 (7.8)	4 (3.8)		4 (4.2)	1 (1.9)	9 (10.5)	
E. Prosthodontics	14 (6.0)	5 (3.9)	9 (8.7)		3 (3.1)	2 (3.8)	9 (10.5)	
F. Periodontology	11 (4.7)	7 (5.4)	4 (3.8)		3 (3.1)	2 (3.8)	6 (7.0)	
G. Pediatric dentistry	4 (1.7)	3 (2.3)	1 (1.0)		0 (0.0)	1 (1.9)	3 (3.5)	
H. Restorative dentistry	4 (1.7)	2 (1.6)	2 (1.9)		0 (0.0)	0 (0.0)	4 (4.7)	
15. If you would like to specialize in orthodontics, what is the most important reason?				0.01				0.99
A. Financial gain	74 (31.9)	28 (21.7)	46 (44.2)		29 (30.2)	19 (35.8)	26 (30.2)	
B. Lower surgical stress	52 (22.4)	33 (25.6)	19 (18.3)		23 (24.0)	11 (20.8)	18 (20.9)	
C. Contribution to professional life	30 (12.9)	19 (14.7)	11 (10.6)		11 (11.5)	6 (11.3)	13 (15.1)	
D. Social status	20 (8.6)	15 (11.6)	5 (4.8)		7 (7.3)	5 (9.4)	8 (9.3)	
E. Personal skills	20 (8.6)	13 (10.1)	7 (6.7)		10 (10.4)	4 (7.5)	6 (7.0)	
F. Patients' needs	19 (8.2)	12 (9.3)	7 (6.7)		8 (8.3)	5 (9.4)	6 (7.0)	
G. Being a field open to technological developments	15 (6.5)	9 (7.0)	6 (5.8)		7 (7.3)	3 (5.7)	5 (5.8)	
16. In your opinion, what is the greatest disadvantage of orthodontic specialization?				0.6				0.03
A. Long patient follow-up period	130 (56.0)	66 (51.2)	64 (61.5)		43 (44.8)	32 (60.4)	55 (64.0)	
B. Specialty quota and competition	72 (31.0)	46 (35.7)	26 (25.0)		36 (37.5)	13 (24.5)	23 (26.7)	
C. Requirement for patient cooperation	11 (4.7)	5 (3.9)	6 (5.8)		3 (3.1)	4 (7.5)	4 (4.7)	
D. Requirement for personal skill	7 (3.0)	5 (3.9)	2 (1.9)		5 (5.2)	2 (3.8)	0 (0.0)	
E. Long duration of specialty training	5 (2.2)	3 (2.3)	2 (1.9)		5 (5.2)	0 (0.0)	0 (0.0)	
F. High rate of complications	4 (1.7)	2 (1.6)	2 (1.9)		1 (1.0)	2 (3.8)	1 (1.2)	
G. Physical difficulties / ergonomics	4 (1.7)	2 (1.6)	2 (1.9)		3 (3.1)	0 (0.0)	1 (1.2)	

n = number of participants; % = percentage of total; Analysis was performed using the Chi-square test; Post hoc pairwise comparisons were conducted using Bonferroni correction (adjusted significance level: $p < 0.0167$); Significant pairwise differences are reported in the results section

More than half of the students (51.5%) evaluated their experiences related to orthodontics as “mostly positive.” Additionally, a vast majority of the participants (87.5%) believed that there is a need for the orthodontics department in the future. Interest in the specialty branch was the most important criterion in choosing a specialty department (43.9%). The distribution of these criteria was significantly different according to sex ($p = .004$). Women prioritize “interest” (51.9%), whereas men view “job opportunity” and “financial gain” as more primary.

Orthodontics (34.9%) was the most desired branch. A total of 46.5% of women and 20.2% of men placed orthodontics in first place ($p < .001$). The difference was significant only between 3rd- and 5th-year students ($p = .001$) (Figure 2). The participants believed that the greatest financial gain is in the Orthodontics department (44.4%). The perception of financial gain changes significantly according to grade level ($p = .002$). Post hoc comparisons revealed a significant difference between 3rd- and 5th-year students ($p < .001$).

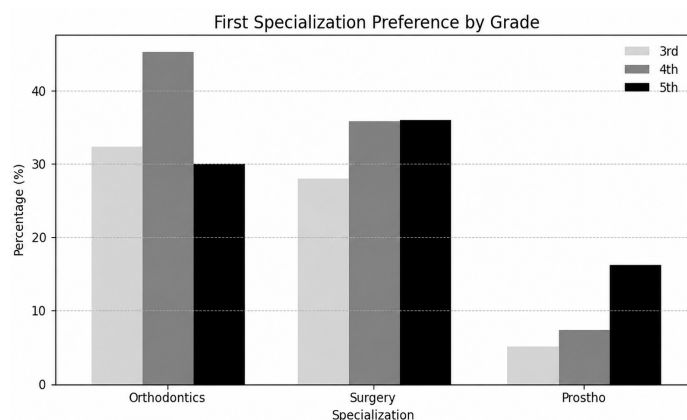


Figure 2. Comparison of the primary specialization preferences (Orthodontics, Surgery, and Prosthodontics) across different grade levels

The Oral and Maxillofacial Surgery branch was identified by the students as the most difficult specialty (71.1%), the field with the most complications (74.6%), and the most important branch in terms of dentistry (53.9%).

Financial gain (31.9%) was identified as the greatest source of motivation for students desiring orthodontics. Motivation sources differ significantly between genders ($p = .01$). In men, the financial gain expectation (44.2%) stands out, whereas in women, the lower surgical stress (25.6%) is more prominent in the selection of the orthodontics department. “Long-term patient follow-up” (56%) is seen as the greatest disadvantage of the orthodontic specialty. This selection increases significantly as the grade level progresses, reaching 64% among 5th-year students ($p = .03$). However, post hoc pairwise comparisons with Bonferroni correction did not reveal statistically significant differences between specific grade groups.

Discussion

The main finding of this study is that orthodontics is still the most preferred specialty among dental students and this preference is dynamically influenced by increasing clinical experience in the undergraduate education, gender specific motivations and an evolving perception of clinical realism. The most remarkable finding is that students’ perceptions of the disadvantages of orthodontics change significantly with the increasing level of education. Students in the pre-clinical phase primarily focused on systemic factors such as competition for specialty exams and limited quotas, whereas senior students emphasized the direct clinical processes such as long-term patient follow-up and clinical responsibility. This process shows that students’ perceptions of orthodontics have successfully developed from theoretical idealism to clinical reality.

Orthodontics is described in the literature as a specialty with high financial returns, prestige, and work-life balance advantages [6]. Consistent with the findings of the study by Erhamza et al. [6] in a different geographical region, 34.9% of the participants in the present study reported that orthodontics was their first career choice and that this specialty offers the highest financial

earnings. These findings suggest that orthodontics remains a highly appealing profession for dental students today.

In recent years, the integration of digital technologies and clear aligner systems into orthodontic practice has emerged as a key factor driving increased interest in this specialty [13]. Bilici Geçer and Elburus [13] reported that dental students have a very high level of awareness regarding intraoral scanners, 3D printing processes, and clear aligner technologies. This high level of familiarity with current technologies may enhance the perceived prestige of the field, thereby increasing its appeal to students. Similarly, Sadhunavar et al. (2024) demonstrated a widespread positive perception of clear aligner treatment among dental students and emphasized that orthodontics is a field open to technological innovations [14]. These findings suggest that while digital transformation enhances the prestige of orthodontics, a realistic assessment of these technologies has developed in tandem with direct clinical experience.

In addition, the special demographic structure of the Southeast Anatolian region, with a high child population and a low number of patients per specialist, increases the regional need for orthodontic care [15,16]. Although the vast majority of the participants in our study (87.5%) were aware of the regional need for orthodontic treatment, this awareness did not always translate into individual career optimism. On the contrary, students identified intense competition in the specialty exam, quota restrictions, and the need for long-term patient follow-up as the main deterrent factors. This realistic view contrasts with some studies done in more developed areas of Türkiye and shows that students see orthodontics not only as a prestigious professional field but also as a discipline that requires a high level of clinical responsibility [2,4]. Although the regional needs are objectively high, students’ career perceptions are shaped within a more cautious and realistic framework [15,16].

One of the most important factors affecting career planning is the DUS [1,5]. Although the high scores needed for specialization in orthodontics are considered a major barrier, this field is still popular and students’ academic self-efficacy and expectations of success may outweigh external barriers [1,3]. This implies that personal interest and the perceived prestige of the specialty are more powerful motivators than the deterrent effect of exam competition [5].

A great majority of the students (69.3%) reported their first encounter with orthodontics before university. One of the possible explanations is that as the majority of the orthodontic patients are children and young adults, the students are bound to have experienced orthodontics themselves or to know someone within their immediate circle who has undergone orthodontic treatment. As a result, orthodontics is identified as a specialty that students can directly see and experience at an early age compared with other dental specialties [8]. However, with the increase of the academic level, significant changes in the perception of the timing of this first encounter are observed, suggesting that

the undergraduate education actively shapes the professional awareness. Wendling et al. [8] found that interest in orthodontics was greatly influenced by faculty and direct clinical experience. Consistent with this finding, faculty influence (59.4%) was the primary factor in the third-year students' view of orthodontics in our study, whereas clinical experience became the primary determinant in upper-level students. This transition suggests that students' perceptions of their field of specialization have shifted from theoretical concepts to clinical realities. Post hoc analyses also revealed that the difference was mainly between third-year students and upper-class students, confirming the shift to clinical training as a critical turning point in professional development.

Gender was found to be one of the most important variables affecting specialty choice ($p = .004$). The finding that female students value personal interest in the field (51.9%) more than male students (who value financial gain (26.0%) and career opportunities (29.8%)) is highly compatible with the literature. Taşöker and Çelik [3] also stated in their study that women prioritize personal interest in specialty selection, while men prioritize financial returns. Importantly, the association of orthodontics with a lower level of surgical stress (25.6%) was a significant factor for female students in choosing this specialty. This can be explained by the fact that surgical specialties are associated with higher risks of complications and greater difficulty levels.

Quota limits and exam competition were cited as the disadvantages of the orthodontics specialty more often by students in the lower years, but 64.0% of fifth-year students believed the main disadvantage was long-term patient follow-up. As students gain more clinical experience, they become more familiar with the nature of the specialty and the logistical difficulties of the practice process, which allow them to evaluate the specialty more realistically. This can be considered one of the most original findings of our study.

The duration of orthodontic treatments is usually 1.5–2 years, which causes concerns about the long-term patient follow-up, especially for senior students, and results in a more cautious, rational and practice-oriented approach to the specialty [8]. A structured “Longitudinal Clinical Observation Program” that can be initiated from the third year might be suggested to overcome these concerns. In this educational model, students can be follow-up coordinators for selected orthodontic cases during their three years of clinical training. Students follow the same patients until graduation and can directly observe the biological and mechanical progression of treatment. In this way, long-term patient follow-up can be transformed from a frightening theoretical concept in the students' eyes into manageable clinical competency and the transition between the preclinical and clinical phases can be made more balanced.

This study contributes to the literature by examining changes in the students' perceptions throughout their undergraduate education, as opposed to simply measuring their career choices in orthodontics at a superficial level. In particular, the

perceptual changes observed among upper-class students clearly demonstrate the decisive role of direct clinical experience in professional decision-making processes [6].

However, there are a number of limitations associated with this study. The study was conducted at one site and was performed only at a public university. As such, the ability to generalize the findings to private universities or institutions with different educational infrastructures may be limited. In addition, the socioeconomic levels of the participants were not evaluated. As this variable can have a significant effect on career preferences and long-term professional planning, it should be considered when interpreting the results. Finally, the cross-sectional design of this study does not allow the identification of causal relationships and does not allow the tracking of changes in perceptions over time in the same individuals. Future longitudinal and multi-center studies will contribute to a more comprehensive understanding of these professional changes.

Conclusion

This study was conducted to determine the fundamental factors shaping the perspectives, career motivations, and specialty preferences of dental students at a state university's dental faculty regarding orthodontics. According to the data obtained from the research, orthodontics remains the most popular specialty among dental students. Female students prioritize personal interest in the field, while male students prioritize financial returns and job opportunities in their choice of specialty. Students' perceptions of orthodontics also change as they progress through their studies. Concerns such as quotas and exam competition are at the forefront in lower grades, while clinical concerns such as long patient follow-up periods come to the fore in upper grades. This change demonstrates that undergraduate education instills a more responsibility-oriented perspective in students.

Ethical Approval

This study was approved by the Clinical Sciences Ethics Committee of Harran University (Approval No: HRÜ/26.02.97), and all procedures were conducted in accordance with the ethical standards of the Declaration of Helsinki.

Patient Consent

Written informed consent was obtained from all participants prior to their participation in the study.

Conflict of Interest

The authors confirm the absence of any conflicts associated with this work.

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