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Research Article

The Examination of Professionalism Attitudes Among Dental Students According to Class Level: A Cross-Sectional Study Using the Professionalism Assessment Scale

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Abstract

The aim of this study was to evaluate professionalism attitudes among dental students across different year levels and to investigate the effect of clinical experience on the subscales of the Professionalism Assessment Scale. This cross-sectional study included 412 students enrolled in the Faculty of Dentistry at Muğla Sıtkı Koçman University. Data were collected using the Turkish version of the Professionalism Assessment Scale (PAS-TR), the validity and reliability of which have been previously established. The scale comprises three subscales: Professional Relationship and Development, Empathy–Humanism, and Responsibility. Internal consistency was assessed using Cronbach’s alpha coefficient. Intergroup comparisons were performed using the Kruskal–Wallis test, followed by the Mann–Whitney U test for post hoc pairwise analyses when statistically significant differences were identified. Overall professionalism attitude scores did not differ significantly among year levels ($p > 0.05$). However, students in the clinical years (fourth and fifth years) demonstrated significantly higher scores in the Professional Relationship and Development ($p = 0.023$) and Responsibility ($p = 0.030$) subscales compared with preclinical students. No statistically significant differences were observed for the Empathy–Humanism subscale. The overall internal consistency of the scale was high (Cronbach’s $\alpha = 0.88$).

Although overall professionalism attitudes remained relatively stable across year levels, improvements were observed in subdomains closely related to clinical experience.

Keywords: Clinical education, dental students, PAS-TR, professionalism.

Introduction

Professionalism is a multidimensional competency that encompasses honesty, responsibility, and respectful communication in clinical practice, while prioritizing patient welfare and upholding the principles of autonomy. The Physician Charter defines these principles as the foundation of the professional social contract in contemporary medical and dental education (1). Professional competence extends beyond technical knowledge and skills; the consistent and measured integration of communication, clinical reasoning, emotional regulation, and reflective self-assessment also constitutes an essential component of professional capability (2).

In competency-based medical and dental education, professionalism is systematically structured, and its assessment is recommended through observable behaviors demonstrated at progressively increasing levels of complexity (3). In dentistry, professionalism represents a core component of both undergraduate and postgraduate curricula, and its continuous monitoring through reliable assessment tools is critical for educational quality and professional regulation (4). Evidence increasingly supports the role of clinical training experiences in fostering the development of professionalism, highlighting the importance of intentionally integrating this dimension into curricular design (5).

Professionalism is not merely an educational requirement but is directly linked to tangible outcomes related to patient safety and professional standards. Studies have shown that unprofessional behaviors observed during medical school are significantly associated with disciplinary actions in later professional life (6). Similarly, unprofessional conduct within healthcare teams can introduce risks and operational challenges in clinical service delivery (7). Scale-based assessment methods provide a practical and reproducible means of evaluating professionalism. For this purpose, the Professionalism Assessment Scale (PAS), developed by Klemenc-Ketiš and Vrečko, is a 22-item, five-point Likert-type instrument comprising three factors: Empathy–Humanism, Professional Relationship and Development, and Responsibility. Its validity and reliability have been confirmed in the original population (8). The Turkish adaptation of PAS demonstrated a stable three-factor structure with high internal consistency and test–retest reliability among medical students (9). Similar psychometric properties were reported in dental students, indicating that professionalism attitudes in dentistry can be reliably assessed using PAS (10).

In dental education, the transition to clinical training typically begins in the third year, and the increased patient contact and responsibilities in the fourth and fifth years may reinforce components of professionalism such as professional identity formation, communication, and ethical decision-making. Given the distinct learning environments of preclinical (years 1–3) and clinical (years 4–5) phases, a systematic variation in professionalism attitudes across year levels can be anticipated. This study aimed to compare professionalism attitudes among dental students from the first to fifth year using the PAS-TR and to examine whether these attitudes differed according to clinical experience. In this context, the null hypothesis of the study is that professionalism attitudes and related subscale scores among dental students do not differ significantly according to year level or clinical experience.

Materials and Methods

Ethical approval for the study was obtained from the Non-Interventional Clinical Research Ethics Committee of Cappadocia University on 10 September 2025 (Decision No: 25.09). All volunteer students enrolled in the 1st, 2nd, 3rd, 4th, and 5th years of the Faculty of Dentistry at Muğla Sıtkı Koçman University were included in the study. The inclusion criteria consisted of being a student at Muğla Sıtkı Koçman University Faculty of Dentistry and providing informed consent to participate, while the exclusion criterion was unwillingness to take part in the study.

The PAS is a 22-item, five-point Likert-type self-assessment instrument. Response options include “1 = Strongly disagree,” “2 = Disagree,” “3 = Neutral,” “4 = Agree,” and “5 = Strongly agree” (Table 1). The professionalism subscales were evaluated as follows: Empathy–Humanism with items 1, 2, 3, 4, 6, 8, 10, 16, 19, and 20; Professional Relationship and Development with items 5, 9, 11, 12, 13, 14, 15, and 22; and Responsibility with items 7, 17, 18, and 21. Higher scores indicate more positive professionalism attitudes. Additional variables collected through a short demographic form included age, gender, year of study, intention to pursue specialization, post-graduation plans, and weekly hours of clinical observation. The PAS and demographic form were completed by 427 volunteers, and no identifying personal information was collected. For subgroup analysis, third-year students were compared with fourth- and fifth-year students because the third year represents the transitional stage before intensive clinical training, whereas the fourth and fifth years involve direct patient contact and increased

clinical responsibility. This comparison was performed to evaluate the potential association between clinical exposure and professionalism attitudes.

Table 1: Professionalism Assessment Scale-PAS

Items	1	2	3	4	5
1. When managing patients, the physician should put aside his/hers prejudices.	☐	☐	☐	☐	☐
2. The current bad mood of the physician should not affect the management of patients.	☐	☐	☐	☐	☐
3. The physician should have a respectful relationship with the patients.	☐	☐	☐	☐	☐
4. Physicians should have a respectful relationships with their coworkers.	☐	☐	☐	☐	☐
5. The physician should constantly engage in continuous professional education.	☐	☐	☐	☐	☐
6. The physician should do his/her best to help the patient in every consultation.	☐	☐	☐	☐	☐
7. The physician should not judge the patient by appearance.	☐	☐	☐	☐	☐
8. The physician should adapt to the level of the patient's understanding.	☐	☐	☐	☐	☐
9. The physician should set a clear limit to which the patient can claim his/her requests.	☐	☐	☐	☐	☐
10. The physician should be a good role model for students.	☐	☐	☐	☐	☐
11. The physician should be able to set a clear line between private and professional life.	☐	☐	☐	☐	☐
12. The physician should aspire to a professional relationship in his/her team.	☐	☐	☐	☐	☐
13. A lot of clinical knowledge is not sufficient to be a good physician.	☐	☐	☐	☐	☐
14. Physician-patient communication is the basis of patient management.	☐	☐	☐	☐	☐
15. The physician should also try to understand the patient's nonmedical problems (i.e., poor financial status, family relationship problems) and include them in consultation.	☐	☐	☐	☐	☐
16. Each patient deserves individual management.	☐	☐	☐	☐	☐
17. It is the physician's duty to present his/hers professional opinion to the patient in such a way that the patient can understand and accept it.	☐	☐	☐	☐	☐
18. The physician can not always know what is best for each patient.	☐	☐	☐	☐	☐
19. The physician must protect the confidentiality of the patient.	☐	☐	☐	☐	☐
20. The physician should show interest in the patient.	☐	☐	☐	☐	☐
21. The physician should tell the patient frankly if there is something he/she does not know.	☐	☐	☐	☐	☐
22. It is acceptable that the physician can make mistakes.	☐	☐	☐	☐	☐

Statistical Analysis

Sample size estimation was performed using the G*Power 3.1.2 software (University of Kiel, Germany) based on a one-way analysis of variance framework for the year-level variable. The analysis targeted 80% statistical power and a medium effect size (Cohen's $f = 0.25$), with a type I error probability of 0.05. Accordingly, the minimum required sample size was calculated as $n = 200$.

Demographic characteristics of participants were summarized using Frequency (n) and Percentage (%). For the items and subscales of the scale, Mean (M) and Standard Deviation (SD) values were calculated. Reliability of the scales was assessed using Cronbach's alpha coefficient. Normality of the data was examined with the Kolmogorov–Smirnov test. Since the data did not follow a normal distribution, nonparametric statistical methods were applied. Changes in professionalism attitudes across year levels were evaluated using the Kruskal–Wallis test, while subgroup comparisons between clinical (4th and 5th year) and nonclinical (3rd year) students were conducted using the Mann–Whitney U test. A p -value < 0.05 was considered statistically significant.

Results

Following missing data and outlier analyses, 412 of the 427 completed questionnaires were deemed suitable for evaluation. The demographic characteristics of the participants are summarized in Table 2. The study sample consisted of 412 students, of whom 225 (54.6%) were female and 187 (45.4%) were male. The majority of the students (68.7%) were between 19 and 22 years of age. Additionally, 29.4% of the participants were fourth-year students. More than half of the students (55.8%) reported 10 hours or fewer of weekly clinical observation. Most students (86.2%) indicated having post-graduation plans or an intention to pursue specialization. Over half of the participants (56.3%) stated that they had not previously received professionalism training (Table 3).

Reliability coefficients for the scales and the overall questionnaire are presented in Table 4. Among the subscales, Empathy–Humanism demonstrated the highest internal consistency ($\alpha = 0.84$). The overall reliability coefficient of the questionnaire was 0.88.

Table 2: Demographic Characteristics of the Participants

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	225	54.6
	Male	187	45.4
Age	18 years and below	30	7.28
	19-22 years	283	68.7
	23 years and above	99	24.02
Weekly Clinical Observation Hours	10 hours or less	230	55.8
	11-20 hours	117	28.4
	21 hours and above	65	15.8
Year of Study	1st year	71	17.2
	2nd year	76	18.4
	3rd year	75	18.2
	4th year	121	29.4
	5th year	69	16.7
Total		412	100

Table 3: Distribution of Participants' Post-Graduation Plans and Prior Professionalism Training

Variable	Category	Frequency (n)	Percentage (%)
Do you have a post-graduation plan or interest in specialization?	No	15	3.6
	Undecided	42	10.2
	Yes	355	86.2
Have you previously received professionalism training?	No	232	56.3
	Yes	180	43.7

Table 4: Reliability Analysis Results for the Scales

Scales	Cronbach's Alpha
Empathy and Humanism	0.84
Professional Relationship and Development	0.68
Responsibility	0.48
Overall	0.88

Descriptive statistics for the items included in the professionalism scale and its subscales are shown in Table 6. The item with the highest mean score was “The dentist should maintain a respectful relationship with patients” (mean = 4.83), while the item with the lowest mean score was “The dentist does not always know what is best for the patient” (mean = 3.57). The mean total professionalism score was 97.9, with a standard deviation of 9.14 (Figure 1).

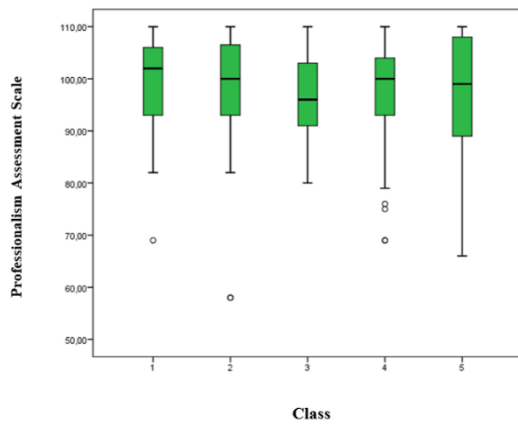
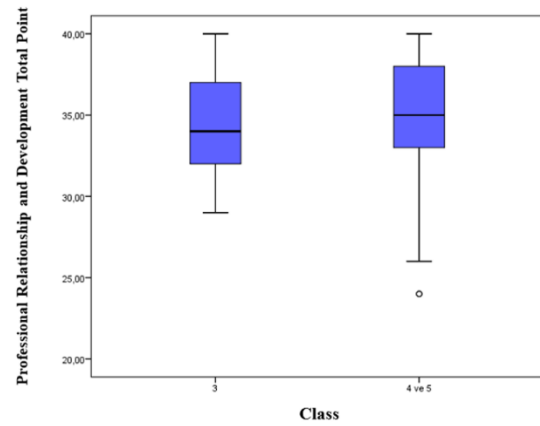
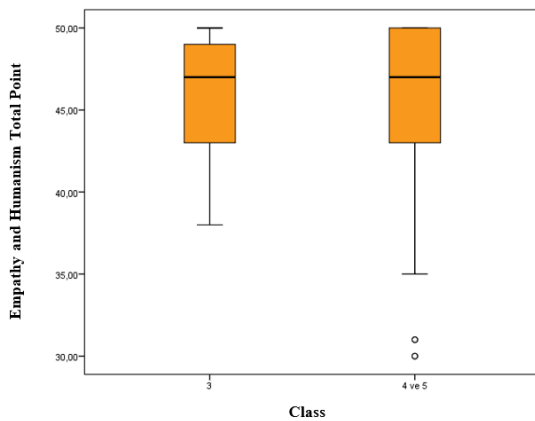
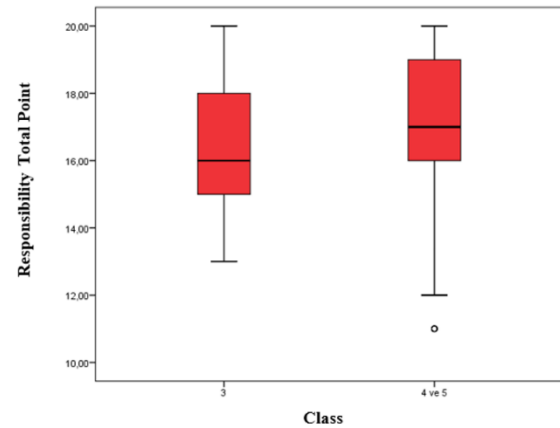
**Figure 1.** The Box Plot of Professionalism Assessment Scale**Figure 2.** The Box Plot of the Professional Relationship and Development**Figure 3.** The Box Plot of the Empathy and Humanism**Figure 4.** The Box Plot of the Responsibility

Table 5: Descriptive Statistics of Professionalism Assessment Scale and Subscales

Subscales	Mean	SD
<i>Empathy and Humanism</i>	45.88	4.44
When managing patients, the physician should put aside his/hers prejudices.	4.51	0.73
The current bad mood of the physician should not affect the management of patients.	4.61	0.74
The physician should have a respectful relationship with the patients.	4.83	0.47
Physicians should have a respectful relationship with their coworkers.	4.70	0.61
The physician should do his/her best to help the patient in every consultation.	4.70	0.55
The physician should adapt to the level of the patient's understanding.	4.45	0.76
The physician should be a good role model for students.	4.65	0.69
Each patient deserves individual management.	4.42	0.81
The physician must protect the confidentiality of the patient.	4.57	0.67
The physician should show interest in the patient.	4.44	0.75
<i>Professional Relationship and Development</i>	34.80	3.77
The physician should constantly engage in continuous professional education.	4.24	0.78
The physician should set a clear limit to which the patient can claim his/her requests.	4.39	0.76
The physician should be able to set a clear line between private and professional life.	4.52	0.68
The physician should aspire to a professional relationship in his/her team.	4.61	0.63
A lot of clinical knowledge is not sufficient to be a good physician.	4.03	1.19
Physician-patient communication is the basis of patient management.	4.57	0.67
The physician should also try to understand the patient's nonmedical problems (i.e., poor financial status, family relationship problems) and include them in consultation.	3.96	1.09
It is acceptable that the physician can make mistakes.	4.48	0.74
<i>Responsibility</i>	17.20	2.07
The physician should not judge the patient by appearance.	4.53	0.83
It is the physician's duty to present his/her professional opinion to the patient in such a way that the patient can understand and accept it.	4.56	0.66
The physician cannot always know what is best for each patient.	3.57	1.08
The physician should tell the patient frankly if there is something he/she does not know.	4.55	0.67
Overall	97.90	9.14

*SD: Standard Deviation

Table 6: Kruskal–Wallis Test Results for Total Professionalism Assessment Scale

Variable	Category	n	Mean Rank	Mean	SD	Kruskal-Wallis Test		Effect size
						Test value	p	
Class Year	1st year	71	227.01	99.39	8.71	6.763	0.149	0.01
	2nd year	76	214.88	98.15	10.16			
	3rd year	75	179.74	96.53	7.55			
	4th year	121	201.54	97.68	8.53			
	5th year	69	213.95	97.94	10.84			

*n: number of participants; Mean: arithmetic mean; SD: standard deviation. $p < 0.05$

Table 7: Mann–Whitney U Test Results for the Empathy and Humanism, Professional Relationship and Development, and Responsibility Subscales

Subscales	Class	n	Mean	SD	Mean Rank	Median	U	p	Effect Size
Empathy and Humanism	3	75	45.8	3.59	130.24	47	6918	0.71	0.02
	4 and 5	190	45.6	4.53	134.09	47			
Professional Relationship and Development	3	75	34.22	3.26	116.05	34	5854	0.023*	0.14
	4 and 5	190	35.15	3.69	139.69	35			
Responsibility	3	75	16.50	1.84	116.97	16	5922	0.03*	0.13
	4 and 5	190	17.02	2.18	139.33	17			

*: n: number of participants; Mean: arithmetic mean; SD: standard deviation; U: Mann–Whitney U test statistic. $p < 0.05$.

According to the Kruskal–Wallis test results examining differences in total professionalism scores across year levels, no statistically significant differences were observed ($p = 0.149 > 0.05$) (Table 7). Mann–Whitney U test results for the Empathy–Humanism, Professional Relationship and Development, and Responsibility subscales are presented in Table 7, and corresponding box plots are shown in Figures 2, 3, and 4, respectively.

Based on the Mann–Whitney U analysis, the median scores of the “Professional Relationship and Development” and “Responsibility” subscales differed significantly between

third-year students and those in the clinical years (fourth and fifth years) ($p < 0.05$). The median score for the Professional Relationship and Development subscale was higher in the clinical group (35) than in third-year students (34), and this difference was statistically significant ($p = 0.023 < 0.05$). Similarly, the median Responsibility subscale score was higher among fourth- and fifth-year students (17) than among third-year students (16), representing a significant difference ($p = 0.03 < 0.05$). In contrast, no statistically significant differences were found between the groups for the Empathy–Humanism subscale ($p = 0.71 > 0.05$).

Discussion

In the present study, the professionalism attitudes of dental students were evaluated across year levels, and the impact of clinical training experience on the subscales of professionalism was examined. The findings indicated that overall professionalism levels did not differ significantly between year levels; however, students in the clinical years demonstrated significantly higher scores in the “Professional Relationship and Development” and “Responsibility” subscales. This suggests that the components of professionalism do not develop simultaneously and that attitudes related to clinical experience mature more prominently.

In the study conducted by Amritha et al. (11) across four dental schools in India, internship-year dental students exhibited the highest professionalism scores, and these differences were statistically significant. The authors attributed this finding to interns’ career-oriented approaches, heightened sense of responsibility toward patients and society, and increased opportunities to directly observe dentist–patient interactions. The same study also reported an upward trend in “empathy–humanism” scores as years of education increased, with empathy gradually improving from the first year but showing a slight decline in the final year. Similarly, the significant increases observed in the Professional Relationship and Development and Responsibility subscales among fourth- and fifth-year students in our study align with the findings of Amritha et al. Active engagement in clinical practice appears to contribute meaningfully to students’ development of professional identity and accountability. This parallel highlight that professionalism is reinforced not only through theoretical instruction but also through observational learning and role modeling enabled by direct patient interaction.

Studies conducted in Türkiye further support these findings. Kaşalı et al. (10) confirmed the three-factor structure of the PAS-TR in dental students (Cronbach's $\alpha = 0.90$) and reported mean scores comparable with those observed in our study. Tanrıverdi et al. (9) similarly demonstrated that the scale is valid and reliable among medical students, emphasizing the strong internal consistency of the empathy–humanism subdimension. In contrast, the lack of significant differences in empathy–humanism scores across year levels in our study suggests that these attitudes may be acquired early and remain stable throughout training. Additionally, Barnhoorn (12) noted that professionalism assessments largely measure “beliefs,” which may not always directly correspond to observable behavioral outcomes.

This study has several limitations. First, its cross-sectional design does not allow causal interpretations regarding changes in professionalism attitudes over time. Second, the PAS-TR is a self-report instrument, which may have introduced social desirability bias in students' responses. Third, the study sample was limited to the students of a single dental school, which may restrict the generalizability of the findings; variations in curricula, clinical training intensity, and instructional approaches across different institutions may influence professionalism attitudes to differing extents.

Conclusion

This study demonstrated that overall professionalism attitudes among dental students did not differ significantly across year levels; however, substantial increases were observed in the Professional Relationship and Development and Responsibility subscales among students in the clinical years. These findings suggest that the components of professionalism do not evolve uniformly and that areas linked to clinical experience show more pronounced maturation. Integrating professionalism training with clinical practice and reinforcing it through mentorship, feedback, and other supportive educational strategies is recommended.

Conflict of Interest

The authors declare no conflict of interest.

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