https://doi.org/10.62243/edr.1914870

Assessment of Dental Students' Confidence in Performing Endodontic Treatment: A Survey Study

Mehmet Kutluhan UÇUK[1], Hakkı SUNAY[2]

Abstract

Aim The theoretical and practical training that dentists receive, along with their experience in patient care during their studies, form the foundation for the treatments they will perform after graduation and their confidence in these treatments. This study was conducted to identify the stages in which dentists feel less competent or inadequate during treatments and to improve these areas.

Material and method A survey designed according to the Likert scale, was conducted among third, fourth, and fifth-year students via the Google Forms platform. Based on the data obtained, suggestions for adjustments and improvements in the students' theoretical and practical training within the faculty were identified. The survey achieved a participation rate of 85%, with 170 students from the third, fourth, and fifth years.

Results An analysis of the responses revealed that students generally feel confident in their treatments and successfully complete the diagnostic and treatment processes. However, confidence levels decreased in areas such as repeating root canal treatments, rubber-dam applications, and handling complications. Areas requiring more focus include administering anesthesia, managing emergencies, taking radiographs, increasing practical classes, enhancing clinical observation, increasing clinical sessions, and using endomotors, as reported by the students.

Conclusion Based on these results it is planned to offer additional lessons and workshops and make adjustments to laboratory classes to focus on the stages where students feel inadequate.

Keywords Dentistry, Education, Endodontics, Oral medicine, Self confidence

Introduction

Confidence and clinical competence are very important for safe and effective dental practice. Dentistry, as a healthcare profession centered on patient well-being, requires practitioners not only to possess theoretical knowledge but also to demonstrate sufficient self-confidence in performing clinical procedures. However, there are stages in some treatment procedures where dentists may feel inadequate, and these stages can affect the treatment processes. In contemporary practice, physicians may often experience feelings of inadequacy in certain treatment methods, which can affect the overall quality of care provided. In the field of dentistry, a profession fundamentally focused on human health, it is crucial that dentists possess both confidence and competence in their abilities. Confidence, a vital element in the practice of medicine, is cultivated through the experiences accumulated before graduation. There are several areas that require improvement, such as the integration of video-based resources to support learning and clinical practice (1). The digital world has increasingly been integrated into this field. These advancements may enhance learning and support the development of self-confidence by improving access to educational resources (2). This study was conducted to identify the areas where intern dentists at Altınbaş University Faculty of Dentistry feel less confident during their clinical internships, to implement necessary improvements, and to serve as a framework for similar future studies.

To achieve this, an online survey was administered to collect data on the specific aspects of endodontic treatments where intern dental students at Altınbaş University Faculty of Dentistry feel insecure. The findings from the survey were utilized to formulate recommendations for enhancing and adjusting the theoretical and practical training programs offered by the faculty.

Material and Methods

The study has ethical approval (2024-BIAEK/19-51). The survey was conducted exclusively within the Department of Endodontics at Altınbaş University Faculty of Dentistry. The survey was distributed to 3rd, 4th, and 5th-year students at Altınbaş University Faculty of Dentistry, and participants were contacted via messaging applications. multiple-choice questions, structured according to the Likert scale, were administered through the Google Forms platform. Initially, the survey underwent a pilot study involving 35 participants, during which deficiencies were addressed, and adjustments were made to enhance clarity. Based on feedback obtained during the pilot phase, necessary revisions were made to improve

Correspondence: Mehmet Kutluhan UÇUK, mkucuk@biruni.edu.tr

[1] Biruni University, Faculty of Dentistry, Department of Endodontics, Istanbul, Turkiye
[2] Nişantaşı University, Faculty of Dentistry, Department of Endodontics, Istanbul, Turkiye

Received: 25.03.2026 / Accepted: 27.04.2026 / Published: 03.08.2026

the structure of the questionnaire. Following these modifications, the finalized survey was administered electronically using the Google Forms platform. The survey focused on assessing students' confidence levels in various stages of endodontic treatment procedures, with responses measured on a Likert scale ranging from 1 to 5, where 1 represented very high confidence and 5 represented very low confidence. In addition, an open-ended question was included to explore students' perceptions regarding which aspects of their education, if introduced earlier, might have enhanced their confidence in clinical practice. Inclusion Criteria: (1) Participants must be 3rd, 4th, or 5th-year students enrolled in the Faculty of Dentistry. (2) Participants must have completed at least two semesters of endodontic education focusing on endodontic treatment procedures. Exclusion Criteria: (1) Students who are not in their 3rd, 4th, or 5th year of dental education are ineligible for the study. (2) Students who have not completed at least two semesters of endodontic education are ineligible for the study.

In the introductory section of the survey, participants were provided with detailed information regarding the objectives of the study and the intended use of the collected data. It was emphasized that all responses would remain completely anonymous, participation was voluntary, and participants had the right to withdraw their consent at any point during or after the survey. As a survey-based research study, the introduction clearly outlined that participation was entirely voluntary. The scope of participation was limited to responding to professionally oriented questions related to endodontic procedures, and no personal or sensitive data were collected. These measures were applied to ensure confidentiality, minimize response bias, and maintain the ethical integrity of the study.

Statistical Analysis

To calculate the sample size for the survey, the following parameters were established: Power (test strength) at 0.80, Effect size at 0.3, and Type-1 error (α) at 0.05. Based on these criteria, the minimum required sample size was determined to be 90 students, with a total of 170 participants ultimately included in the study. Under these conditions, the post-hoc Power value for 170 samples was calculated to be 97.3%.

The normality of continuous measurements in the study was assessed using the Kolmogorov-Smirnov test (n>50) and Skewness-Kurtosis tests. As the measurements followed a normal distribution, parametric tests were applied. Descriptive statistics for continuous variables were reported as mean, standard deviation (SD), minimum, maximum, count (n), and percentage (%). One-Way Analysis of Variance (ANOVA) was conducted to compare continuous measurement values (scores) across different class levels. After the variance analysis, the "Duncan test" was used to identify significant differences between groups. Additionally, the Chi-square test was used to determine relationships between categorical variables. A statistical significance level of $p<0.05$ was applied for all calculations, and the data were analyzed using the SPSS software package (IBM SPSS for Windows, version 26)

Results

The study included participants according to their class populations as follows: 67 out of 70 students from the 3rd year, 54 out of 63 students from the 4th year, and 49 out of 67 students from the 5th year. This resulted in a total of 170 participants from an available pool of 200 students, achieving an 85% participation rate. The survey questions and the corresponding responses are presented below.

Survey questions:

1.Choose your grade
* 67 participants from the 3rd year, 39.4%
* 54 participants from the 4th year, 31.8%
* 49 participants from the 5th year, 28.8%

2.Do you feel confident that treating patients in the clinic is easy?
* The selection rate for "Very confident" is 22.4% (n=38)
* The selection rate for "Confident" is 54.1% (n=92)
* The selection rate for "Neutral" is 18.2% (n=31)
* The selection rate for "Little confidence" is 4.1% (n=7)
* The selection rate for "Very little confidence" is 1.2% (n=2)

3.Do you feel confident in making a diagnosis?
* The selection rate for "Very confident" is 19.4% (n=33),
* The selection rate for "Confident" is 50% (n=85),
* The selection rate for "Neutral" is 24.1% (n=41),
* The selection rate for "Little confidence" is 5.3% (n=9),
* The selection rate for "Very little confidence" is 1.2% (n=2).

4.Do you feel confident in administering anesthesia to patients?
* The selection rate for "Very confident" is 21.8% (n=37),
* The selection rate for "Confident" is 51.8% (n=88),
* The selection rate for "Neutral" is 17.1% (n=29),
* The selection rate for "Little confidence" is 7.1% (n=12),
* The selection rate for "Very little confidence" is 2.4% (n=4).

5.Do you feel confident in locating canal orifices?
* The selection rate for "Very confident" is 24.1% (n=41),
* The selection rate for "Confident" is 50% (n=85),
* The selection rate for "Neutral" is 15.9% (n=27),
* The selection rate for "Little confidence" is 5.9% (n=10),
* The selection rate for "Very little confidence" is 4.1% (n=7).

6.Do you feel confident in using a rubber dam
* The selection rate for "Very confident" is 24.1% (n=41),
* The selection rate for "Confident" is 50% (n=85),
* The selection rate for "Neutral" is 15.9% (n=27),
* The selection rate for "Little confidence" is 5.9% (n=10),
* The selection rate for "Very little confidence" is 4.1% (n=7).

7.Do you feel confident in determining canal length using an apex locator?
* The selection rate for "Very confident" is 34.7% (n=59),
* The selection rate for "Confident" is 41.8% (n=71),
* The selection rate for "Neutral" is 14.7% (n=25),
* The selection rate for "Little confidence" is 4.1% (n=7),
* The selection rate for "Very little confidence" is 4.7% (n=8).

8.Do you feel confident in using rotary instruments?
* The selection rate for "Very confident" is 42.9% (n=73),
* The selection rate for "Confident" is 40.6% (n=69),
* The selection rate for "Neutral" is 11.8% (n=20),
* The selection rate for "Little confidence" is 2.4% (n=4),
* The selection rate for "Very little confidence" is 2.4% (n=4).

9.Do you feel confident in performing periapical radiography?
* The selection rate for "Very confident" is 41.8% (n=71),
* The selection rate for "Confident" is 50.6% (n=86),
* The selection rate for "Neutral" is 4.7% (n=8),
* The selection rate for "Little confidence" is 2.4% (n=4),
* The selection rate for "Very little confidence" is 0.6% (n=1).

10.Do you feel confident in performing root canal retreatment?
* The selection rate for "Very confident" is 16.5% (n=28),
* The selection rate for "Confident" is 35.9% (n=61),
* The selection rate for "Neutral" is 30% (n=51),
* The selection rate for "Little confidence" is 11.2% (n=19),
* The selection rate for "Very little confidence" is 6.5% (n=11).

11.Do you feel confident in completing treatment in a single appointment (approximately 1.5 hours) in accordance with medical standards?
* The selection rate for "Very confident" is 25.3% (n=43),
* The selection rate for "Confident" is 60% (n=102),
* The selection rate for "Neutral" is 10% (n=17),
* The selection rate for "Little confidence" is 2.9% (n=5),
* The selection rate for "Very little confidence" is 1.8% (n=3).

12.Do you feel confident in managing complications if they arise?
* The selection rate for "Very confident" is 11.8% (n=20),
* The selection rate for "Confident" is 31.2% (n=53),
* The selection rate for "Neutral" is 40.6% (n=69),
* The selection rate for "Little confidence" is 11.2% (n=19),
* The selection rate for "Very little confidence" is 5.3% (n=9).

13.Do you feel confident after receiving endodontic education (theoretical, preclinical, and clinical)?
* The selection rate for "Very confident" is 28.8% (n=49),
* The selection rate for "Confident" is 54.1% (n=92),
* The selection rate for "Neutral" is 10.6% (n=18),
* The selection rate for "Little confidence" is 5.3% (n=9),
* The selection rate for "Very little confidence" is 1.2% (n=2).

14.Do you feel confident in performing endodontic treatment on a patient in the clinic?
* The selection rate for "Very confident" is 28.2% (n=48),
* The selection rate for "Confident" is 54.7% (n=93),
* The selection rate for "Neutral" is 10% (n=17),
* The selection rate for "Little confidence" is 5.9% (n=10),
* The selection rate for "Very little confidence" is 1.2% (n=2).

15.Which type of anesthesia do you think you will find most difficult to administer to a patient?
* The selection rate for Inferior Alveolar Nerve Block is 54.1% (n=92),
* The selection rate for Superior Alveolar Nerve Block is 22.4% (n=38),
* The selection rate for Local Infiltrative Anesthesia is 2.9% (n=5),
* The selection rate for Intrapulpal Anesthesia is 7.1% (n=12),
* The selection rate for Intraligamentary Anesthesia is 13.5% (n=23).

Overall, most participants reported moderate to high levels of confidence across the evaluated procedures

16.During endodontic treatment, which stages do you find the most challenging? (Select up to 3 responses)
* Finding the canal entrances: 69 participants (40.6%)
* Applying the rubber dam: 65 participants (38.2%)
* Determining the canal length: 55 participants (32.4%)
* Administering anesthesia: 59 participants (34.7%)
* Diagnosing or reaching a diagnosis: 40 participants (23.5%)
* Filling the root canal: 38 participants (22.4%)
* Shaping the root canal: 33 participants (19.4%)
* Taking X-rays: 22 participants (12.9%)
* Creating the access cavity: 13 participants (7.6%)
* Completing root canal treatment: 7 participants (4.1%)
* Irrigation: 2 participants (1.2%)

From the data, the most commonly selected challenges are finding canal entrances, applying the rubber dam, and administering anesthesia. These areas seem to be where students face the most difficulty during endodontic treatments

17. Which complications do you feel least confident in managing if encountered? (Select up to 3 responses).
* Instrument fracture: 111 participants (65.3%)
* Perforation: 91 participants (53.5%)
* Patient experiencing anaphylaxis, syncope, etc.: 79 participants (46.5%)
* Overfilling the root canal: 37 participants (21.8%)
* Sodium hypochlorite injection: 34 participants (20%)
* Sodium hypochlorite extrusion: 31 participants (18.2%)
* Post-treatment flare-ups: 18 participants (10.6%)
* Creating a step during the treatment: 23 participants (13.5%)
* Underfilling the root canal: 16 participants (9.4%)
* Filling material overflow: 16 participants (9.4%)

The most challenging complications for students are instrument fracture, perforation, and anaphylaxis or syncope. These results suggest that additional training and focus on managing these complications could help increase students' confidence in handling such scenarios.

Additionally, in response to the open-ended question, "Which topics do you believe, if emphasized more in previous training, would make you feel more confident now?", 66 out of 170 participants provided answers, and only 36 indicated that there were specific areas needing further focus.

Upon reviewing the responses to this question, the topics most frequently highlighted as needing further attention were anesthesia administration and the application of rubber dams, which

were observed to align with the deficiencies noted in the survey. Other areas of concern identified by students included complications, emergency situations, complication management, diagnosis, bypassing broken instruments, radiography, increasing practical training, enhancing clinical observation, increasing clinical session frequency, use of endomotors, cases of crown destruction covered by soft tissue, retreatment, locating canal entrances, permanent restoration of teeth with completed root canal fillings, and reviewing all procedural steps.Moreover, an analysis of the relationships between the questions and responses yielded the following insights: According to the results of the One-Way ANOVA test, with post-hoc analysis using the Duncan test, the comparison of students' self-confidence scores based on class levels revealed the following significant findings:

For the question "Do you feel confident in administering anesthesia to patients?", a statistically significant difference was observed between class levels (p=0.009). The self-confidence scores of 4th-year students were found to be significantly lower than those of 3rd- and 5th-year students, contributing to the observed difference. Similarly, for the question "Do you feel confident in using rotary instruments?", a statistically significant difference was found between class levels (p=0.002). Again, the self-confidence scores of 4th-year students were significantly lower than those of 3rd- and 5th-year students, creating the difference. For the question "Do you feel confident in performing periapical X-rays?", a statistically significant difference was noted between class levels (p=0.046). In this case, the self-confidence scores of 4th-year students were lower than those of 3rd- and 5th-year students, contributing to the observed difference. For the remaining questions not listed above, no statistically significant differences were observed between class levels ($p > 0.05$). These findings suggest that 4th-year students generally exhibit lower self-confidence in these specific procedural areas compared to their 3rd- and 5th-year peers. The relationship and distribution between the students' "class levels" and their responses to the "self-confidence questions" were analyzed using the Chi-square test. According to the findings: A statistically significant relationship was observed between the question "Do you feel confident that treating patients in the clinic is easy?" and "class levels" (p=0.001). Similarly, a statistically significant relationship was found between the question "Do you feel confident in administering anesthesia to patients?" and "class levels" (p=0.001). A statistically significant relationship was also observed between the question "Do you feel confident in determining canal length using an apex locator?" and "class levels" (p=0.025). A statistically significant relationship was found between the question "Do you feel confident in completing treatment in a single appointment in accordance with medical standards?" and "class levels" (p=0.006). Additionally, a statistically significant relationship was found between the question "Do you feel confident after the endodontic education you have received?" and "class levels" (p=0.006). Finally, a statistically significant relationship was observed between the question "Do you feel confident in performing endodontic treatment on a patient in the clinic?" and "class levels" (p=0.006). For the remaining questions, no statistically significant relationships were observed between "self-confidence levels" and "class levels" ($p > 0.05$). These results indicate that students' confidence levels in various aspects of endodontic procedures are significantly influenced by their class levels, particularly in key areas such as anesthesia administration, canal length determination, and completing treatments within a standard appointment time. However, for other questions, class level did not appear to have a statistically significant impact on self-confidence.

Discussion

Treatment procedures in dentistry are continuously evolving with advancements in technology and the expanding body of literature. These changes have progressively shifted patient demands from purely functional outcomes to a greater emphasis on aesthetics (2). Such advancements enable clinicians to adopt new techniques and integrate diverse treatment approaches into clinical practice, thereby enhancing both the scope and effectiveness of dental care. Technological advancements, notably artificial intelligence (AI), are significantly transforming various fields, including healthcare. AI-based algorithms are capable of analyzing extensive datasets—including imaging results, genomic information, and medical records—to detect patterns and forecast patient outcomes, thereby facilitating earlier and more precise diagnoses (3). These technologies are increasingly applied in areas such as patient data management, diagnostic processes, prosthetic design, and treatment planning. Its applications range from document management and patient record-keeping to operational data processing, prosthesis design, and diagnostic and therapeutic interventions (4). Although these developments offer substantial benefits, their contribution to undergraduate clinical confidence remains indirect and dependent on how effectively they are integrated into dental education. However, not all practitioners approach every treatment with the same level of confidence and expertise. The primary objective of endodontic treatment is to achieve thorough cleaning and shaping of the root canal system while eliminating microorganisms through effective irrigation and medication (5). Practitioners may feel confident in some treatment stages, yet experience insecurity in others. Confidence and competence in medical skills are shaped during the educational years, and identifying areas where students feel less competent is essential for improving dental education. The relatively lower confidence levels observed among fourth-year students, compared to both third- and fifth-year students, may be explained by the transitional nature of this stage in dental education with real patients. Fourth-year students typically shift from preclinical simulation-based training to real patient care, where clinical variability, increased responsibility, and the risk of complications become more evident. This transition can temporarily reduce perceived competence despite increasing theoretical knowledge, creating a discrepancy between knowledge acquisition and clinical confidence. At Altınbaş University Faculty of Dentistry, a study was conducted to assess the self-confidence of 3rd, 4th, and 5th-year students in performing endodontic procedures. A Likert-scale survey was administered, with p-values calculated using the chi-square method. The Duncan test was used to identify specific subcategories contributing to significant differences, although the test itself does not calculate p-values. This study, however, has limitations. It is a single-center study, and thus the findings may not be representative of dental students nationwide. Therefore, future multi-center studies are needed to identify gaps

in knowledge and skills and to develop solutions for ensuring competency. Similar patterns can be seen, where confidence does not increase linearly with academic progression but may temporarily decline during periods of increased clinical responsibility. This finding aligns with the concept that confidence development is closely linked not only to knowledge acquisition but also to repeated clinical exposure and experiential learning. Events such as the COVID-19 pandemic and natural disasters, like earthquakes, disrupted face-to-face training, reducing patient interactions and practical clinical experience. Endodontics was one of the fields most affected by these disruptions (6). The reduction in clinical practice during these periods may have contributed to decreased manual dexterity and lower confidence among students. These findings are consistent with existing literature, which emphasizes that interruptions in clinical training significantly impact both technical skill development and self-confidence. The lack of consistent hands-on experience during critical training periods may disproportionately affect students who are in transitional phases of education, such as fourth-year students. Additionally, confidence is subjective and may vary based on individual experiences, further complicating competency assessments. Endodontic treatments cover a wide range of procedures, from diagnosis to tooth restoration, each requiring distinct skills. A clinician must be proficient in all stages. This study evaluated the competency levels of students at Altınbaş University, with 3rd-year students included to assess their confidence before clinical practice. Confidence tends to increase as students progress academically. Research also indicates that dental students report higher stress levels in their final years (7). Positive correlations between clinical activity and self-confidence have also been recorded (8). However, it is important to note that increased stress levels in senior students may coexist with higher confidence levels, suggesting that confidence is influenced not only by psychological factors but also by accumulated clinical experience. This dual effect highlights the complexity of interpreting confidence as a sole indicator of competence. Direct contact with patients plays a significant role in building confidence, as evidenced by studies indicating that clinical experience is crucial for mastering procedures such as root canal treatment (9). In another study, final-year dental students were found to feel more confident in their clinical skills after completing their final year (10). The findings of the present study are in agreement with these observations, supporting the notion that repeated clinical exposure and procedural familiarity are key determinants of confidence development. The disruption of clinical training has significantly impacted students' progress and self-confidence, highlighting the need for supplementary educational tools, such as video-based learning (11). Videos have proven effective in improving understanding and confidence, particularly in challenging procedures like anesthesia (12). Endodontic treatments are not always performed by specialists. The availability of specialists is limited in some clinics, and general practitioners are often responsible for endodontic cases (13). Newly graduated students often report feeling inadequate in certain areas due to gaps in their undergraduate education, underscoring the need for enhanced training (14). This underscores the clinical importance of ensuring adequate confidence and competence at the undergraduate level, as newly graduated dentists are often required to perform complex procedures without specialist supervision. Endodontic procedures integrate various fields, such as cardiology, pediatric dentistry, and periodontology, often requiring a multidisciplinary approach to patient care. Continuous evaluation of endodontic treatments performed by intern students is essential for identifying internal issues within clinical education. This monitoring helps address procedural errors and implement corrective actions to improve education quality (15). Regular assessment of student performance and confidence levels may therefore serve as a valuable feedback mechanism for curriculum development, enabling targeted improvements in areas identified as deficient. Moreover, studies suggest that working with a dental assistant and having readily available equipment can enhance students' learning experiences (16). Hands-on training during the final years of dental school is crucial for building the confidence required to manage patients independently (17). While dental practice is competency-based, confidence is equally important. Graduates should remain cautious when their confidence exceeds their proficiency (18). This highlights the importance of balancing confidence with actual clinical competence, as overconfidence without sufficient skill may lead to clinical errors. Even after graduation, continued supervision is often necessary to ensure that final-year students develop the necessary competence for independent practice (8). High self-confidence typically indicates that an intern dentist has successfully managed a sufficient number of clinical cases with approval from instructors (17). Effective training in rubber dam application can enhance students' confidence and efficiency, making them more likely to use this tool in future treatments (19). However, rubber dam application can be time-consuming when not practiced frequently, and many students and recent graduates hesitate to use it due to a lack of proficiency (20). The lower confidence observed in rubber dam application in the present study is consistent with previous findings and may be attributed to insufficient repetition during training, reinforcing the need for increased emphasis on this procedure in undergraduate curriculum. This hesitancy can lead to deviations from medical standards, which is unacceptable in clinical practice. Dentists must understand the ethical and legal responsibilities associated with patient care (21). Furthermore, developing improved educational models can significantly enhance the quality of education (22). Overall, the findings of this study highlight the need for targeted, procedure-specific educational interventions aimed at strengthening both competence and confidence, particularly during transitional phases of dental education.

Conclusion

Students generally exhibit confidence in their theoretical and practical knowledge, although there is a clear need for more frequent practice in hands-on applications. From an overall perspective, the majority of 3rd, 4th, and 5th-year students feel assured in their ability to treat patients. While confidence gaps during treatment phases are less common, managing complications remains an area that requires significant attention. Notably, students most frequently report a lack of confidence in the placement of the rubber dam. The most commonly encountered complication is instrument fracture, and the anesthesia type that causes the greatest confidence gap is the Inferior Alveolar Nerve Block.

Procedures that require higher levels of manual ability, precision, or clinical judgment—such as rubber dam application and complication management—tend to be associated with lower confidence levels, particularly when they are not practiced consistently during undergraduate training. Based on these findings, it is essential to make adjustments in student training, with a specific focus on addressing these areas of weakness. The effectiveness of these modifications should be assessed in a follow-up study. Each institution should implement internal revisions to their curriculum and training methodologies, guided by student feedback. In particular, targeted educational strategies—such as simulation-based training, structured repetition of critical procedures, and supervised clinical exposure—may help bridge the gap between theoretical knowledge and practical competence. Additionally, future studies with a larger number of participants should be encouraged to further validate these findings and support continuous improvement in dental education. Furthermore, multi-center studies and longitudinal designs may provide deeper insight into how confidence evolves over time and how educational interventions influence both competence and clinical performance.

Declarations

Ethics Committee Approval: The study protocol was approved by Biruni University Ethics Committee (2024-BIAEK/19-51)

Informed Consent: *Written informed consents were obtained from patients who participated in this study*

Peer Review: *Externally peer-reviewed.*

Author Contributions: *Conception/Design of Study- M.K.U., H.S.; Data Acquisition- M.K.U.; Data Analysis/Interpretation- M.K.U., H.S.; Drafting Manuscript- M.K.U.; Critical Revision of Manuscript- M.K.U.; Final Approval and Accountability- M.K.U., H.S.; Material and Technical Support- M.K.U.; Supervision- H.S.*

Conflict of Interest: *Authors declared no conflict of interest.*

Financial Disclosure: *Authors declared no financial support.*

REFERENCES

1. *Awad, Z., Moore, R., & Zoltie, T. (2023). Development and impact of a clinical instructional video on self-confidence in luxator use amongst dental undergraduates. Oral Surgery, 16(1), 13–25.*
2. *Uçuk, M. K. (2024). Bilgisayar destekli restorasyonlar ve diş hekimliğinde kullanımının değerlendirilmesi. İstanbul Sabahattin Zaim Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 6(1), 1–4.*
3. *Faiyazuddin, M., Rahman, S. J. Q., Anand, G., Siddiqui, R. K., Mehta, R., Khatib, M. N., & Sah, R. (2025). The impact of artificial intelligence on healthcare: A comprehensive review of advancements in diagnostics, treatment, and operational efficiency. Health Science Reports, 8(1), e70312.*
4. *Uçuk, M. K. (2024). Evaluation of the place of artificial intelligence applications in medical sciences and dentistry. Van Diş Hekimliği Dergisi, 5(1), 24–31.*
5. *Uçuk, M. K. (2024). Irrigation solutions and areas of use in endodontic treatments. Aurum Journal of Health Sciences, 6(2), 137–152.*
6. *Sağlam, H., & Atasever Çakmak, F. (2023). Diş hekimliği stajyer öğrencilerinde COVID-19 sürecinde tamamlanamayan preklinik eğitiminin gelecek kaygısına ve öz güven seviyesine etkisi: Kesitsel çalışma. Turkiye Klinikleri Journal of Dental Sciences, 29(3).*
7. *Elani, H. W., Allison, P. J., Kumar, R. A., Mancini, L., Lambrou, A., & Bedos, C. (2014). A systematic review of stress in dental students. Journal of Dental Education, 78(2), 226–242.*
8. *Al-Koky, M., Daud, A., & Neville, P. (2023). Dental students' self-reported confidence level in restorative crown and bridge procedures: A UK quantitative study. European Journal of Dental Education, 27(1), 187–194.*
9. *Davey, J., Bryant, S. T., & Dummer, P. M. H. (2015). The confidence of undergraduate dental students when performing root canal treatment and their perception of the quality of endodontic education. European Journal of Dental Education, 19(4), 229–234.*
10. *Meisha, D. E., & Al-Dabbagh, R. A. (2021). Self-confidence as a predictor of senior dental student academic success. Journal of Dental Education, 85(9), 1497–1503.*
11. *Francesca, Z., Luca, R., Andrea, P., Davide, P., & Nicoletta, Z. (2023). Clinical activities suspended: How COVID-19 affected the self-confidence of Italian dental students. European Journal of Dental Education.*
12. *Kenny, K. P., Alkazme, A. M., & Day, P. F. (2018). The effect of viewing video clips of paediatric local anaesthetic administration on the confidence of undergraduate dental students. European Journal of Dental Education, 22(1), e57–e62.*
13. *De Moor, R., Hülsmann, M., Kirkevang, L. L., Tanalp, J., & Whitworth, J. (2013). Undergraduate curriculum guidelines for endodontology. International Endodontic Journal, 46(12), 1105–1114.*
14. *Murray, F. J., Blinkhorn, A. S., & Bulman, J. (1999). An assessment of the views held by recent graduates on their undergraduate course. European Journal of Dental Education, 3(1), 3–9.*
15. *Ilgüy, D., İlgüy, M., Fişekçioğlu, E., Ersan, N., Tanalp, J., & Dölekoğlu, S. (2013). Assessment of root canal treatment outcomes performed by Turkish dental students: Results after two years. Journal of Dental Education, 77(4), 502–509.*
16. *Lynch, C. D., Ash, P. J., & Chadwick, B. L. (2010). Student perspectives and opinions on their experience at an undergraduate outreach dental teaching centre at Cardiff: A 5-year study. European Journal of Dental Education, 14(1), 12–16.*
17. *Wu, J., Feng, X., Chen, A., Zhang, Y., Liu, Q., & Shao, L. (2016). Comparing integrated and disciplinary clinical training patterns for dental interns: Advantages, disadvantages, and effect on students' self-confidence. Journal of Dental Education, 80(3), 318–327.*
18. *Honey, J., Lynch, C. D., Burke, F. M., & Gilmour, A. S. M. (2011). Ready for practice? A study of confidence levels of fi-*

nal year dental students at Cardiff University and University College Cork. European Journal of Dental Education, 15(2), 98–103.

19. *Ryan, W., & O'Connell, A. (2007). The attitudes of undergraduate dental students to the use of the rubber dam. Journal of the Irish Dental Association, 53(2).*
20. *Emek, B. G., & Keçeci, A. D. (2019). Endodontide etik sorunlar ve malpraktis. Süleyman Demirel Üniversitesi Sağlık Bilimleri Dergisi, 10(3), 327–332.*
21. *Uçuk, M. K., & Dincer, A. N. (2024). Factors, precautions and solution suggestions of complication and malpractice in endodontic treatment practices. Necmettin Erbakan Üniversitesi Diş Hekimliği Dergisi, 6(2), 151–161.*
22. *Praveen, G., Pujitha, D., Lakshmi Durga, I. S., Uddaraju, S. R., Narisetty, S. G. P., Sayana, R. G., ... & Mokkarala, S. L. T. (2023). Comparing traditional and comprehensive clinical training methods in dental education: A study of students' self-confidence and clinical performance. British Dental Journal, 234(9), 682–686.*