

Confidence in Performing Endodontic Treatment and Perception of the Quality of Endodontic Education

Shoug Salman AlHamoudi¹, Shahad Nawaf AlRashidi¹, Hadeel Abdulhafid AlHarbi¹, Noor Jamal AlNaji¹, Mariam Abdulaleem AlMohammed¹, Shahzeb Hasan Ansari^{2*}

¹ Department of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia. ² Faculty Preventive Dentistry, College of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia.

Abstract

Undergraduate endodontic education has experienced considerable variations in current years, inspired by variations in knowledge, methods, and materials as well as educational styles. It appears that the extra root canal treatments students operate on patients, the better their self-efficacy is at graduation. Nevertheless, treating difficult cases may decrease their self-efficacy and confidence. This is a cross-sectional study conducted among dental students in Riyadh using an online survey. Dental universities in Riyadh were contacted and participants were requested to fill up the survey. 500 students from clinical levels were utilized in this study. 73.1% of students reported the time spent on endodontic education being adequate, 69.5% considered the quality of lectures to be good and 23.2% reported that the lab's sessions do not have enough time. Statistically significant comparisons were observed when inquired about gender's confidence in performing anterior RCT (p-value: .001), performing posterior RCT (p-value: .009), determining the restorability of the tooth (p-value: .001) Overall, the students are satisfied with the quality of endodontic education. However, the confidence levels are slightly above average, which does not complement their satisfaction from endodontic education.

Keywords: Confidence, Endodontic education, Dental students' perception, Root canal treatment

INTRODUCTION

Undergraduate endodontic education has experienced considerable variations in current years, inspired by variations in knowledge, methods, and materials as well as educational styles. It is anticipated that freshly graduated dentists acquire the expertise and awareness to treat the majority of the cases that they may face in private practice. This comprises of executing root canal treatment (RCT) on straightforward single as well as multirouted teeth, detecting and handling dental emergencies, comprising of pulpal origin, and handling trauma in deciduous as well as permanent dentitions [1, 2].

Conventionally, a student's readiness to graduate was assessed by written and oral examination blended with the accomplishment of a target number of clinical cases. This approach of assessment is progressively being substituted by competency-based procedures where students are expected to exhibit their achievement of several learning outcomes outlined by the University Accreditation Bodies. The idea that doing a procedure many times improve not only expertise but also confidence is common. On the contrary, experience alone may not enhance performance if this experience is structured [3, 4].

A UK-based study revealed that assurance and proficiency when carrying out simple root canal treatment improved with time. Nonetheless, numerous students were not self-

assured and knowledgeable, suggesting that there is room to improve endodontic teaching. Dental students proposed numerous methods to improve teaching including, the initiation of diverse learning approaches, a bigger number of short laboratory sessions, more organized practical sessions, self-assessment, and refresher laboratory sessions [5].

A similar study among Turkish dental students exhibited students' lower self-assurance in complicated cases in dentistry may be associated with the approach of dental colleges to refer these patients to higher-level students and imparting info regarding these cases on a theoretical basis merely. Though there appears to be an inclination for students to refer difficult cases to a specialist in the future, educators ought to give importance to improving the way information and knowledge are communicated regarding

Address for correspondence: Shahzeb Hasan Ansari, Faculty Preventive Dentistry, College of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia. Shahzebhasan @ riyadh.edu.sa

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How to cite this article: AlHamoudi S S, AlRashidi S N, AlHarbi H A, AlNaji N J, AlMohammed M A, Ansari S H. Confidence in Performing Endodontic Treatment and Perception of the Quality of Endodontic Education. Arch. Pharm. Pract. 2021;12(2):94-8. <https://doi.org/10.51847/IWjk1PplzO>

various aspects of endodontic treatment [6].

A Netherland-based study reported dental students' self-efficacy being affected mainly by their clinical exposure and experience when accomplishing root canal treatment. It appears that the extra root canal treatments students operate on patients, the better their competency is at graduation. Nevertheless, treating difficult cases may decrease their self-efficacy and confidence [7]. Another similar investigation among Brazilian dental students revealed that the anxiety reduces as the students obtain more experience in performing endodontic cases. Though, as they move towards the completion of dental school, stress levels rise. Better accessibility of optional courses in endodontics might be a useful option to provide students with more experience with these cases [8].

Finally, a Norway-based study reported that undergraduate education was deemed insufficient by the majority of participants. When performing RCT, gender differences were noted in security and confidence. Self-confidence was high among subjects who self-assessed their treatment as very good or good. The findings of this research indicate that UG training in Endodontics needs to tackle gender disparities and encourage self-efficacy in clinical training. Hands-on training is the ideal form of constant learning, with problem-solving as the most common topic of interest [9].

Aims of the Study

- To determine the confidence level of dental students when performing endodontic procedures.
- To determine their perception towards the undergraduate endodontic education/training.
- To compare the findings based on gender and dentistry years/levels.

MATERIALS AND METHODS

This is questionnaire-based research conducted among dental students in Riyadh utilizing an online survey. Dental schools in Riyadh city were communicated with and participants were invited to complete the survey. 500 students from clinical levels were utilized in this study.

Google forms survey was fabricated consisting of questions related to personal and demographic data followed by questions linked to confidence levels when treating endodontic cases and perceptions towards training.

Using SPSS version 22, acquired data were analyzed, where descriptive as well as inferential statistics were conducted. Test for normality was conducted, which showed that the data was not normally distributed, therefore the means were compared using the Mann-Whitney U test, and correlations were achieved using Spearman's correlation test.

RESULTS AND DISCUSSION

A total of 500 dental students participated in this study, with a power of sample calculated as 0.81 (**Table 1**). Regarding their gender distribution, 35% were males and 65% were females (**Figure 1**). 10.8% were from the 4th year, 29.9% from the 5th year, and 59.3% were from the 6th year. **Table 2** shows the participant's perceptions towards the undergraduate education received in endodontics. 73.1% of students reported the time spent on endodontic education being adequate, 69.5% considered the quality of lectures to be good and 23.2% reported that the lab's sessions do not have enough time.

Tables 3 show the comparison of mean scores given by the students for each question related to confidence. Statistically significant comparisons were observed when inquired about gender's confidence in performing anterior RCT (p-value: .001), performing posterior RCT (p-value: .009), determining the restorability of the tooth (p-value: .001), assessing quality of a root filling (p-value: .000), providing analgesia (p-value: .000), giving post-operative instructions (p-value: .030), knowing how to restore a tooth after RCT (p-value: .003) and knowing when a post is required to be placed (p-value: .020).

Table 4 shows the correlation of dentistry years and confidence levels, which are presented by spearman's correlation values. Statistically significant positive correlations were obtained when correlated performing anterior RCT (p-value: .000), isolating tooth (p-value: .015), interpreting radiographs (p-value: .001), giving post-operative instructions (p-value: .001), determining the correct recall period (p-value: .004), knowing how to restore a tooth after RCT (p-value: .000) and knowing when a post is required (p-value: .011). Statistically significant negative correlations were observed when correlated placing an inter-appointment dressing (p-value: .019). The rest of the questions did not show any statistically significant correlations.

Power of Sample

Table 1. Power of sample

Mean	5.96
Std Deviation	2.39
Sample size	500
Alpha	0.05
Sample mean	6.23
Standard Error of Mean	0.11
Critical Value	6.14
Beta	0.19
Power	0.81

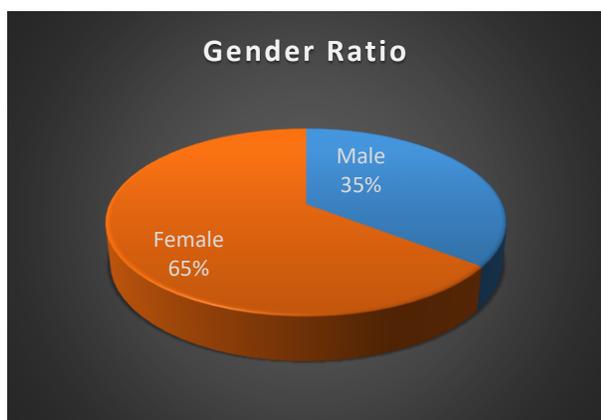


Figure 1. Gender ratio of study participants

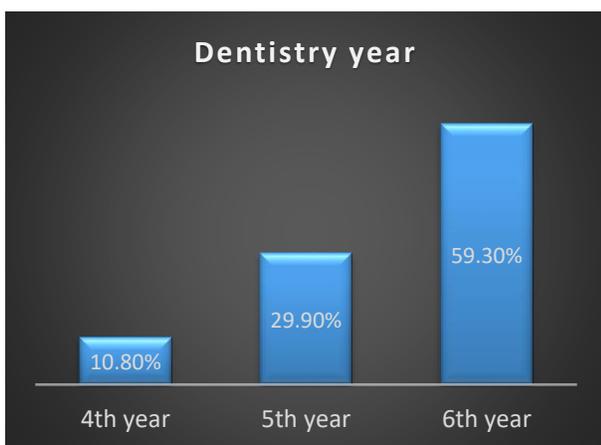


Figure 2. Dentistry year distribution of study participants

Table 2. Perception of students towards endodontic education

Perception towards endodontic education	Responses (%)
Amount of time spent on endodontic education	Less than adequate: 13.2% Adequate: 73.1% More than adequate: 13.8%
Lecture quality	Less than adequate: 11.6% Adequate: 70.7% More than adequate: 17.8%
Quality of practical laboratory sessions	Less than adequate: 23.8% Adequate: 58.5% More than adequate: 17.8%
Perception of lectures	Good: 69.5% Too long: 8.2% Not clear: 6.4% Repetitive: 16%
Perception of labs/practical sessions	Good: 61.1% Poorly organized: 8.4% Not enough time: 23.2% Not enough attention from supervisor: 7.4%

Table 3. Comparison of confidence scores between males and females

Questions to assess confidence	Males	Females	Total	p-value
Confidence in:	Mean score (1 to 10)			
performing anterior RCT	7.65	6.81	7.11	.001*
performing posterior RCT	6.08	5.59	5.76	.009*
Determining restorability	6.62	5.92	6.17	.001*
When to refer patients	6.34	6.14	6.21	.152
Managing the associated risks	6.16	5.84	5.96	.062
Assessing post-operative quality	7.43	6.65	6.93	.000*
At providing anesthesia	7.46	6.52	6.86	.000*
At isolating the tooth?	7.52	7.49	7.50	.977
At preparing the access cavity?	6.89	6.75	6.80	.461
Determining the working length?	7.26	7.03	7.11	.378
Cleaning and shaping the RCT?	7.42	7.03	7.17	.079
Choosing irrigation	7.31	7.30	7.30	.992
Placing an inter-appointment dressing?	6.80	6.46	6.58	.210
Filling the root canal?	7.07	6.53	6.73	.050
Taking radiographs?	7.71	7.42	7.53	.320
Interpreting radiographs?	7.58	7.13	7.29	.087
Giving instructions to patients?	7.61	7.01	7.22	.030*
When to recall the patient?	6.69	6.41	6.51	.318
Knowing how to restore?	7.67	6.92	7.19	.003*
Knowing when a post-placement is required?	7.19	6.64	6.84	.020*
Post retention knowledge?	6.79	6.71	6.74	.946

Table 4. Correlation of confidence in performing various procedures with dentistry years

Questions to assess confidence	Spearman's correlation	p-value
performing anterior RCT	.293	.000*
performing posterior RCT	-.021	.646
Determining restorability	.052	.249
When to refer patients	.004	.923
Managing the associated risks	-.027	.551
Assessing post-operative quality	-.070	.118
At providing anesthesia	-.016	.714
At isolating the tooth?	.109	.015*
At preparing the access cavity?	-.004	.922
Determining the working length?	.043	.338
Cleaning and shaping the RCT?	.058	.194
Choosing irrigation	.072	.105
Placing an inter-appointment dressing?	-.105	.019*

Filling the root canal?	.008	.861
Taking radiographs?	.179	.000*
Interpreting radiographs?	.154	.001*
Giving instructions to patients?	.151	.001*
When to recall the patient?	.128	.004*
Knowing how to restore?	.163	.000*
Knowing when a post-placement is required?	.114	.011*
Post retention knowledge?	.052	.245

This study aimed to determine the confidence levels of students when performing the endodontic treatment and their perception of undergraduate endodontic education. Regarding their education, overall there was a satisfactory level of perception when it comes to the amount spent on endodontic education, lecture quality, laboratory sessions quality, perception of lectures as well as labs.

A study conducted among dental students of Taibah University reported that confidence levels varied substantially between 4th- and 5th-year students in the subsequent steps of root canal treatment: determining the working length, taking and interpreting radiographs during root canal treatment, evaluating the quality of root canal obturation, and recalling the patients periodically in the correct manner. Fourth-year students were more confident regarding these practical steps than fifth-year students [10]. When comparing these findings with our study, we observed that no statistically significant association was found between dentistry and determining the working length, and evaluating the quality of root canal obturation. However, the confidence level was seen high among final year students when inquired about taking and interpreting radiographs and recalling the patients periodically.

A UK-based study revealed that the confidence in performing root canal treatment for posterior and anterior teeth increased with the increase of dentistry year. Moreover, several students believed that the amount of time spent on endodontic instruction and the eminence of teaching must be adequate. The recommended improvements for future endodontic teaching comprised higher numbers of staff supervision and added endodontic practice on extracted teeth prior to meeting patients. There was a significant relationship between students' levels of confidence when completing RCT and their clinical experience [11]. These findings are in support of what we observed in this study, but there was no significant association of posterior RCT confidence with dentistry year as it was in the UK-based study. However, the rest of the results are similar to what we found.

Upon graduation, a dental student is supposed to have the skills to make a correct diagnosis. Although, several studies have revealed that those general practitioners have high confidence in performing root canal procedures. However,

many current investigations have revealed a high frequency of poorly performed RCTs with periradicular disease going seemingly unnoticed and untreated. It is assumed that this may be due to many causes, which include the technical procedures' difficulty, lack of understanding of the aims of treatment and principles, inadequate teaching at the undergraduate level, and poor remuneration for the time required. Therefore, it is imperative to focus more on the undergraduate teaching strategies and improve the knowledge as well as the confidence of students [12].

CONCLUSION

- Overall, the students are satisfied with the quality of endodontic education.
- However, the confidence levels are slightly above average, which does not complement their satisfaction from endodontic education.
- Males were slightly more confident than females when it comes to performing root canal treatment.
- Students' confidence levels tend to get better as they move from lower levels to higher in dental schools.
- There is a need to ensure the complementation of good knowledge with high confidence among students.

ACKNOWLEDGMENTS: Authors of this study would like to acknowledge the support and cooperation of the research center of Riyadh Elm University.

CONFLICT OF INTEREST: None

FINANCIAL SUPPORT: None

ETHICS STATEMENT: None

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