

Confidence Levels of Intern Doctors during Root Canal Treatment Procedures in Saudi Arabia

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ABSTRACT

Introduction: Endodontic is one of the difficult branches in dentistry as it requires special skills to deal with treatment of the root canals. These difficulties come from anatomical complexities of the roots, working area is very limited, and clear and clean area before final obturation is required which is difficult to achieve. In addition, complications and subsequent retreatment are difficult and are time- and materials-wasting.

Methods: A self-administered questionnaire was distributed to intern dentists at all dental schools all around the Kingdom of Saudi Arabia. It consisted of 10 questions related to all possible procedures in endodontic treatment. The confidence level was scored in 5-points Likert scale ranging from 1 "very little confidence" to 5 "very confident". Data were analyzed using SPSS V22 software program. A p-value < 0.05 was considered significant.

Results: Thirteen different dental schools from 13 different universities including 230 intern dentists were included in the analysis. Number of the included interns varied considerably between universities. The largest number of participants were from King Khalid University with 47 interns (18.7%) and the least number of participants were from Alfarabi College and Majmaah University with 9 interns, equally. Most participants were confident or very confident of most of the endodontic procedures. More than two thirds (71.74%) of participants had no experience in removing broken instruments from root canals. About 19.57% of participants also had no experience in performing retreatment of failed RCT. Twenty eight (12.17%) participants had very little confidence regarding using rotary instruments. Less than one third (29.13%) of participants were confident regarding irrigation of root canals. Only three questions had significant differences in means between universities. With regard to gender, no significant differences were found in relation to all confidence questions.

Conclusion: Level of confidence regarding endodontic treatment among intern dentists in Saudi Arabia is acceptable. More practical training, however, for the most difficult procedures are highly recommended.

Keywords: Education, endodontics, self-confidence, dental students, Saudi Arabia

INTRODUCTION

Dentistry is an art and science; it requires good skills besides practical and theoretical bases. Most of its branches are difficult and one of them is endodontic branch which deals with treatment of the root canals. These difficulties come from anatomical complexities of the roots, working area is very limited, and clear and clean area before final obturation is required which is difficult to achieve.

In addition, complications and subsequent retreatment are difficult and are time- and materials-wasting⁽¹⁻³⁾. All these procedures require the dental students and dental practitioners to have good skills and self-confidence.

It is essential, therefore, to include the required basics in the dental curriculum to provide those students and future dentists with the required knowledge and to improve their skills to be able to perform a correct diagnosis for the endodontic cases and to make a correct treatment plan to

provide the patient with a correct and qualified treatment^(4,5).

It is well-known that with the presence of different institutional dental schools the dental curriculum and thus the practical requirements including endodontics will be greatly different.

On the other hand, some basics of the knowledge and science should exist and should be the same all around the dental schools to meet the minimum prerequisites to offer a good treatment for patients. Low self-confidence among dental students or freshly graduated dentists will negatively reflect on their treatment⁽⁶⁻⁸⁾.

Feedback from dental students or intern dentists regarding their perception of the dental subjects and receiving their suggestions and preferences are helpful for improving the learning curriculum and process⁽⁹⁻¹¹⁾.

The aim of the present study was to evaluate the confidence level among freshly graduated dentists in different schools in Saudi Arabia.

METHODS

A self-administrated questionnaire was distributed to intern dentists at all dental school all around the Kingdom of Saudia Arabia. The questionnaire used in this study was adapted from previous studies (7, 12, 13). It consisted of 10 questions related to all possible procedures in endodontic treatment. The confidence level was scored in 5-points Liker scale ranging from 1 “very little confidence” to 5 “very confident”.

The option “no experience” with the score “0” was added to response choices to represent the lack of experience in the included procedures. In addition to the endodontic procedures the questionnaire included items related to the university and gender. Data were analyzed using SPSS V22 software program. Distribution of participants according to name of university and according to gender was presented as frequencies and percentages. The level of confidence was presented in means and SDs with regards to all questionnaire items. Nonparametric Mann Whitney test was used for the difference between the confidence means according to genders while, Kruskal Willis test was used to compare the differences according to universities. A p-value < 0.05 was considered significant.

RESULTS

A total of 242 intern dentists (120 males and 122 females) from 19 different dental schools distributed among the kingdom completed the questionnaire.

Out of which, six dental schools (with 12 participants) were excluded from the inferential analysis because there were only ≤ 3 participants in each dental school who completed the questionnaire. Thirteen different dental schools from 13 different universities including 230 intern dentists were finally included in the analysis. Descriptive analysis of participants according to university's name and according to gender is presented in Table 1.

It can be noted that the number of the included interns varied considerably between universities. The largest number of participants were from King Khalid University with 47 interns (18.7%), followed by interns from King Saud University with 28 participants (12.2%), Jazan University with 27 interns (11.7%), and the least number of participants were from Alfarabi College and Majmaah University with 9 interns, equally. According to gender, number of males, from all universities, was approximately equal to females

(114 compared to 116, respectively). However, participants from Majmaah and Najran universities were only males. Females were considerably more than males in Batterjee College, Jazan University, Riyadh College, and Umm Alqura University.

Distribution of the confidence levels among the participants is shown in Table 2. Most participants were confident or very confident of most of the endodontic procedures. More than two thirds (71.74%) of participants had no experience in removing broken instruments from root canals while, only 3 (1.30%) participants were confident in performing this procedure. About 19.57% of participants also had no experience in performing retreatment of failed RCT while, only 12.61% were very confident in performing retreatment. Twenty eight (12.17%) participants had very little confidence regarding using rotary instruments. Less than one third (29.13%) of participants were confident regarding irrigation of root canals while, more than two thirds (70.87%) were very confident.

Means and SDs, differences in means, and significance of difference for all participants in relation to university and gender are presented in Table 3. The highest mean value of confidence was 4.71 ± 0.46 which was for the question related to irrigation of root canals while, the lowest mean value of confidence was 0.70 ± 1.27 which was related to removing broking instruments from root canals. Most of the means were above the value of 4 which represents the response “confident”.

Most differences in means between the included universities were non-significant ($P > 0.05$). Only three questions had significant differences in means between universities (placement of rubber dam, $P = 0.037$; using rotary instruments, $P < 0.001$; and retreatment, $P < 0.001$). With regard to gender, no significant differences were found in relation to all confidence questions (Table 3). Table 4 presents the mean values of the included universities in relation to the questions which were found to be significantly different.

For the question “placement of rubber dam” three universities had the mean > 3 and < 4 while, the majority of universities had the mean > 4 and < 5 . For the question “using rotary instruments”, most universities had the mean values > 3 and < 4 while only one university had the mean value > 1 and < 2 . No mean values ≥ 4 were found with regard to the question “retreatment”. All mean values ranged from 1 to 3 representing less confidence among participants.

Table 1: Distribution of the participants according to the university and gender (%)

University	All (N= 230)	Gender	
		Male (N= 114)	Female (N= 116)
Al Farabi College	9 (3.9)	3 (3.33)	6 (66.7)
Batterjee College	15 (6.5)	4 (26.7)	11 (73.3)
Hail University	21 (9.1)	11 (52.4)	10 (47.6)
Imam Abdulrahman Bin Faisal University	10 (4.3)	3 (30.0)	7 (70.0)
Jazan University	27 (11.7)	2 (7.4)	25 (92.6)
King Abdulaziz University	18 (7.8)	12 (66.7)	6 (33.3)
King Khalid University	43 (18.7)	27 (62.8)	16 (37.2)
King Saud University	28 (12.2)	19 (67.9)	9 (32.1)
Majmaah University	9 (3.9)	9 (100.0)	0 (0.0)
Najran University	12 (5.2)	12 (100.0)	0 (0.0)
Qassim University	11 (4.8)	7 (63.6)	4 (36.4)
Riyadh Colleges Of Dentistry And Pharmacy	20 (8.7)	4 (20.0)	16 (80.0)
Umm Al Qura University	7 (3.0)	1 (14.3)	6 (85.7)

Table 2: Levels of confidence among participants in relation to the study questions (%)

Questions	Confidence level					
	No experience	Very little confidence	Little confidence	Neutral	Confident	Very confident
Achievement of anesthesia	0	0	5 (2.17)	26 (11.30)	85 (36.96)	114 (49.57)
Placement of rubber dam	0	5 (2.17)	3 (1.30)	31 (13.48)	80 (34.78)	111 (48.26)
Finding root canal orifices	0	5 (2.17)	34 (14.78)	94 (40.87)	70 (30.43)	27 (11.74)
Using rotary instruments	0	28 (12.17)	28 (12.17)	48 (20.87)	85 (36.96)	41 (17.83)
Taking periapical radiograph	0	5 (2.17)	16 (6.96)	45 (19.57)	72 (31.30)	92 (40.00)
Removing broken instruments from root canals	165 (71.74)	15 (6.52)	21 (9.13)	16 (6.96)	10 (4.35)	3 (1.30)
Retreatment	45 (19.57)	12 (5.22)	30 (13.04)	49 (21.30)	65 (28.26)	29 (12.61)
Obturation of root canals	0	0	14 (6.09)	41 (17.83)	106 (46.09)	69 (30.00)
Irrigation of root canals	0	0	0	0	67 (29.13)	163 (70.87)
Restoration of endodontically treated teeth	0	0	0	14 (6.09)	83 (36.09)	133 (57.83)

Table 3: Differences in means between universities and genders

	All (N= 230)	Difference between universities	Gender			
			Male (N= 114)	Female (N= 116)	Mean Difference	P
	Mean ± SD	P	Mean ± SD	Mean ± SD		
Achievement of anesthesia	4.34 ± 0.76	.053	4.33 ± 0.76	4.34 ± 0.77	-.011	858
Placement of rubber dam	4.26 ± 0.90	.037	4.22 ± 0.93	4.29 ± 0.86	-.074	590
Finding root canal orifices	3.35 ± 0.94	.083	3.37 ± 0.90	3.33 ± 0.99	.041	560
Using rotary instruments	3.36 ± 1.25	.000	3.48 ± 1.20	3.24 ± 1.30	.241	150
Taking periapical radiograph	4.00 ± 1.04	.241	4.11 ± 0.92	3.89 ± 1.13	.226	210
Removing broken instruments from root canals	0.70 ± 1.27	.068	0.76 ± 1.33	0.63 ± 1.20	.134	415
Retreatment	2.71 ± 1.68	.000	2.59 ± 1.67	2.84 ± 1.69	-.248	183
Obturation of root canals	4.00 ± 0.85	.413	3.99 ± 0.87	4.01 ± 0.84	-.017	953
Irrigation of root canals	4.71 ± 0.46	.427	4.68 ± 0.47	4.74 ± 0.44	-.066	272
Restoration of endodontically treated teeth	4.52 ± 0.61	.691	4.46 ± 0.61	4.57 ± 0.61	-.104	144

Table 4: Variations in means among universities in relation to the significant questions

University	N	acement of rubber dam	Using rotary instruments	Retreatment
Al farabi college	9	4.11 ± 1.36	2.78 ± 1.64	2.67 ± 2.06
Batterjee College	15	4.13 ± 1.19	3.20 ± 1.89	1.67 ± 1.91
Hail university	21	3.95 ± 0.80	1.90 ± 0.89	1.52 ± 1.66
Imam Abdulrahman Bin Faisal University	10	4.50 ± 0.53	3.70 ± 1.34	2.40 ± 1.51
Jazan university	27	4.07 ± 0.92	3.19 ± 1.14	2.85 ± 1.73
king Abdulaziz university	18	4.78 ± 0.43	4.28 ± 0.57	3.72 ± 0.75
King khalid university	43	4.26 ± 0.90	3.79 ± 0.86	3.19 ± 1.40
king saud university	28	4.50 ± 0.84	3.64 ± 1.25	3.07 ± 1.65
Majmaah university	9	4.44 ± 0.53	4.11 ± 1.27	2.22 ± 1.86
Najran university	12	3.75 ± 1.14	3.42 ± 0.90	1.92 ± 1.73
Qassim university	11	4.27 ± 0.79	3.45 ± 1.37	3.27 ± 1.49
Riyadh colleges of dentistry and pharmacy	20	4.45 ± 0.69	2.70 ± 1.38	3.20 ± 1.24
Umm Al qura university	7	3.71 ± 1.11	3.57 ± 1.27	1.29 ± 1.70

DISCUSSION

The aim of this study was set to explore the confidence level regarding endodontic procedures among freshly graduated dentists who applied for internship at different dental schools in Saudia Arabia. These subjects still have no experience in daily dental practice which is a little bit different from the dental school requirements and environment. On the other hand, they are still fresh with the academic information theoretically and clinically. Exploring the students' perception regarding the education process plays important role in discovering the associated problems and, therefore, improving the academic learning curriculum or syllabus. This present study is the largest study in this issue in Saudia Arabia because it included all dental schools around the kingdom. The response rate from six dental schools was not that enough to be included in the analysis. Number of the intern dentists was clearly different between the different universities which might be related to the number of the registered students in each dental school and the graduated student each year. Another reason may be related to the type of the institutional (public or private) or the regulations in each college.

In general, most interns in the current study were confident or very confident regarding most of the endodontic procedures which reflects the good satisfaction of the endodontic syllabus in the different schools. On the other hand, some specific procedures were found to be difficult such as using rotary instruments, and some other procedures were not performed at all by most of the intern dentists such as removing broken instruments and performing

retreatment. These difficulties are in the same line of another study conducted by **Ayhan et al**⁽¹²⁾, in Turkey, who found that 65% of the senior students had no experience in retrieval broken instruments. In the study of **Doumani et al**⁽¹³⁾, Alfarabi college in KSA, 25.2% reported that they had never removed broken instruments from root canals. This may due to the lack of theoretical information and/or practical application of these procedures during the academic life. All interns in the present study reported that they are confident or very confident in irrigation of root canals. This result is close to that reported by **Ayhan et al**⁽¹²⁾, in which 82.5% were very confident while, in the study of **Mathew ST**⁽¹⁴⁾ which was conducted in Riyadh colleges in KSA only 56% reported confidence in irrigation of root canals. Comparing the means of the confidence levels obtained in this study revealed that response to the question related to placement of rubber dam was 4.26. This score is higher than that observed by **Tanalp et al.**⁽⁷⁾ among Turkish senior dental students which was 3.24, and is much higher than that observed by **Awooda et al.**⁽¹⁵⁾ among Sudanese final-year dental students which was 1.95. However, achievement of anesthesia reported in the current study is similar to that found in the same previous studies^(7, 15). Taking periapical radiograph was found to be 4.00 in this study which is higher than that found among Sudanese final-year dental students⁽¹⁵⁾. With regard to irrigation of root canals and restoration of the endodontically treated teeth, the score means are close to those found in **Tanalp's** study⁽⁷⁾ (all are higher than 4). These variations in response to the level of confidence might be related to the difference in the study

curriculum and/or the practical training. Another reason may be due to the number of the recruited samples. No significant difference was found between both genders with regard to all questions; this result indicates that education level is the same although male and female students are not allowed to study together in KSA. Significant difference was found between the included universities in relation to placement of rubber dam, using rotary instruments, and retreatment. These variations might be related to the difference in syllabus or requirements; or it might be related to the considerable variation in the recruited interns from the universities.

Although this study is the largest in this issue in Saudi Arabia, the interns attitude regarding endodontic difficulties according to the type of the teeth were not included in this survey. Also, the small response rate from some universities might affect the results. Future studies with more questions and more sample sizes are recommended.

CONCLUSION

Within the limitations of the current study it can be concluded that the level of confidence regarding endodontic treatment among intern dentists in most of the dental schools in Saudi Arabia is acceptable. More practical training, however, for the most difficult procedures are highly recommended and should be included in the curriculum.

REFERENCES

1. **Mirza MB (2015):** Difficulties Encountered during Transition from Preclinical to Clinical Endodontics among Salman bin Abdul Aziz University Dental Students. *J Int Oral Health*, 7(1):22-7.
2. **Davey J, Bryant ST, Dummer PM (2015):** The confidence of undergraduate dental students when performing root canal treatment and their perception of the quality of endodontic education. *Eur J Dent Educ.*, 19(4):229-34.
3. **Tchorz JP, Ganter PA, Woelber JP et al. (2014):** Evaluation of an improved endodontic teaching model: do preclinical exercises have an influence on the technical quality of root canal treatments? *Int Endod J.*, 47(5):410-5.
4. **Martins RC, Seijo MO, Ferreira EF et al. (2012):** Dental students' perceptions about the endodontic treatments performed using NiTi rotary instruments and hand stainless steel files. *Braz Dent J.*, 23(6):729-36.
5. **Cowpe J, Plasschaert A, Harzer W, et al. (2010):** Profile and competences for the graduating European dentist - update 2009. *Eur J Dent Educ.*, 14(4):193-202.
6. **European Society of Endodontology (2001):** Undergraduate curriculum guidelines for endodontology. *Int Endod J.*, 34(8):574-80.
7. **Tanalp J, Guven EP, Oktay I (2013):** Evaluation of dental students' perception and self-confidence levels regarding endodontic treatment. *Eur J Dent.*, 7(2):218-24.
8. **Qualtrough AJ (2014):** Undergraduate endodontic education: what are the challenges? *Br Dent J.*, 216(6):361-4.
9. **Henzi D, Davis E, Jasinevicius R et al. (2005):** Appraisal of the dental school learning environment: the students' view. *J Dent Educ.*, 69(10):1137-47.
10. **Oliver R, Kersten H, Vinkka-Puhakka H et al. (2008):** Curriculum structure: principles and strategy. *Eur J Dent Educ.*, 12 (1):74-84.
11. **Plasschaert AJ, Holbrook WP, Delap E et al. (2005):** Profile and competences for the European dentist. *Eur J Dent Educ.*, 9(3):98-107.
12. **Ayhan T, Barut G, Tanalp J (2016):** The self-confidence levels of senior dental students during endodontic treatment procedures. *Turk Endod J.*, 1(1):19-22.
13. **Doumani M, Habib A, Alhababi A et al. (2017):** The internship dentists self confidence levels during root canal treatment procedures. *Intl J Dent Res.*, 5(2):121-4.
14. **Mathew ST (2015):** Evaluation of dental student's perception and self confidence levels regarding endodontic treatment. *Int J Dent Health Sci.*, 2(4):712-21.
15. **Awooda EM, Mudathir MS, Mahmoud SA (2016):** Confidence level in performing endodontic treatment among final year undergraduate dental students from the University of Medical Science and Technology, Sudan (2014). *Saudi Endod J.*, 6(1):26.