ORIGINAL ARTICLE

EVALUATION OF HOUSE OFFICERS CONFIDENCE LEVEL IN PERFORMING ENDODONTIC TREATMENT

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ABSTRACT

The objective of this study was to determine the confidence level of house officers in performing root canal treatment. This cross-sectional study was conducted at Rawal Institute of Health Sciences and Islamic International Dental Hospital from june 2017 to January 2018. An anonymous questionnaire was distributed among house officers of both hospitals. The questionnaire utilized scaled response to determine the level of confidence while performing various steps of root canal treatment. The level of confidence was categorized using 5-point Likert's scale as 1=not at all confident, 2=not very confident, 3=neutral, 4=confident and 5=very confident. Data were entered and analyzed in SPSS version 17.0. Counts and percentages were measured for various parameters of respondent's confidence level. Chi-square test was used to compare confidence level between the two genders and also between the two institutes. Majority of house officers were not confident in placement of rubber dam (44%), working length determination using apex locator (36%) and management of flare-ups (40%). Male gender was found more confident than female regarding various steps of root canal procedure. House officers of Rawal institute of health sciences were more confident in some steps of root canal than house officers of Islamic international dental hospital. Overall it was concluded that though house officers were confident in performing root canal, however, they were found to have low confidence in performing difficult steps like rubber dam application, use of electronic apex locator and management of flare-ups.

Key Words: *Confidence level, house officers, root canal, likert scale*

INTRODUCTION

The incidence and demand of root canal treatment has increased due to improvement in patient awareness regarding saving their tooth as opposed to extraction, this trend is expected to increase further. This emphasizes the need that dental students should be competent enough and must have a full grip of basics of endodontics to enable them to perform endodontic procedures independently.[1,2]

Endodontics is a very diverse and vast specialty that requires a lot of expertise, professionalism and skill. Due to complexity of root canal treatment, the freshly graduate students and house officer lack self confidence in performing treatments independently and are not appropriately prepared to take this challenge. This can results in many teeth left with low quality treatment and many teeth with asymptomatic ongoing pulpal and peri-radicular disease.[3]

Ideally a house officer should have acquired necessary knowledge during graduating so that s/he is able to diagnose endodontic cases correctly, compose a definitive treatment plan and carry out an adequate root canal treatment.[4,5]

In previous studies there is sufficient data on quality of endodontic treatment provided by undergraduate students, but there is little data on how students perceive endodontics and how do they evaluate their self-confidence in performing various steps of root canal treatment.[6] As there a complicated relationship between house officers, their supervisors and working environment, it is therefore, important to get feedback of house officers on quality of curriculum and education.[7,8] So this study aimed at evaluating perception and self-confidence of house officers regarding root canal

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treatment in two private dental institutes.

METHODS

This cross-sectional study was conducted at Rawal Institute of health sciences (RIHS) Islamabad and Islamic international dental hospital (IIDH) in a period of 8 months from June 2017 to January 2018. The ethical approval was granted by the institutional ethics committee. A verbal consent was taken from study respondents. A total of 100 house officers undergoing training at department of endodontics were included from both study sites. The house officers were informed that their participation was voluntary and their response would not affect their grading of academic performance. They were also explained about confidentiality of their identification and right to participate or refusal.

An anonymous questionnaire was distributed among 50 house officers from RIHS and 50 house officers from IIDH. The included house officers were fresh graduates who had ended their rotation in the department of endodontics. Those who had not completed rotation to endodontics were excluded, also those who refused to consent were excluded from the study. After filling demographics including age and gender the house officers were asked to fill some questions regarding various steps of endodontic procedure. Each question consisted of five options which showed the level of confidence at each step. They marked their level of confidence using five-point Likerts scale which is 1=not at all confident, 2= not very confident, 3=neutral, 4=confident and 5=very confident.

After collecting the questionnaire that data was analyzed using statistical package for social sciences (SPSS) version 17.0. Quantitative variable like age was measured as mean and standard deviation. Qualitative variable like gender and confidence level were measured as frequency and percentage. Further selective analysis was done by using chi- square test to compare confidence level between male and female and between two institutes. P value at ≤ 0.05 was considered significant.

RESULTS

In this study out of 100 house officers 56% were female and 44% were male. Most common age group was 24-26 (72%). Mean age of participants was 23.76 ± 1.33. Most common first endodontic case treated was maxillary premolar (36%). Majority of participants marked level of first case difficulty as okay (71%). (Figure I and II)

Confidence of house officers regarding various steps of endodontics is given in Table 1. Regarding placement of rubber dam 44% of participants were not confident, 23% were neutral and 33% were confident. Regarding use of electronic apex locator 36% of participants were not confident, 19% were neutral and 45% were confident. Regarding management of flare-ups 40% of participants were not confident, 27% were neutral and 33% were confident.

Confidence level of participants regarding steps of endodontic treatment was compared according to gender. The individual responses to the likert scale regarding various parameters of steps of endodontic treatment were compared between the two genders using chi-square test. According to these proportional responses, it was found out that male house officers were more confident than female in various steps like diagnosis (p-value, 0.01), achieving anesthesia (p-value, 0.02), working length determination using electronic apex locator (p-value, 0.004), cleaning and shaping of canal (p-value, 0.04), placing an inter-appointment dressing according to case type (p-value, 0.02), managing flare-ups (p-value, 0.002) and assessing quality of root canal obturation (p-value, 0.002). Table 2

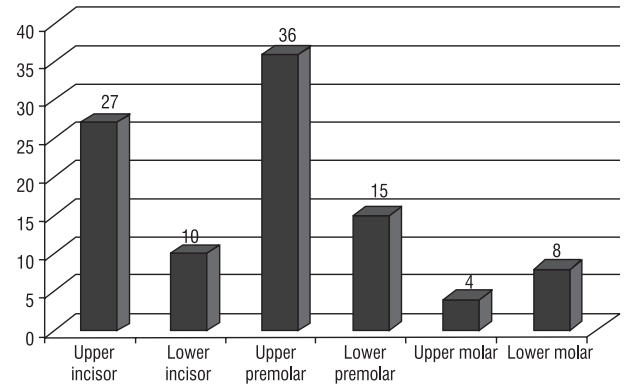

Figure 1: First Endodontic Case Treated by House officers in the study (n=100)

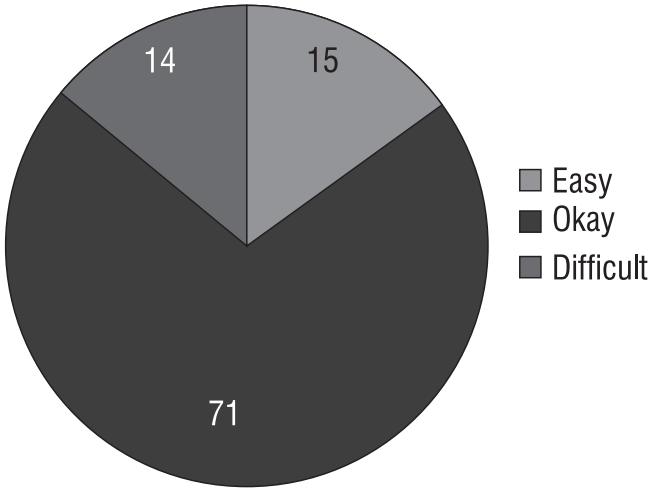

Figure 2: Level of First Case Difficulty faced by House officers (n=100)

TABLE 1: CONFIDENCE LEVEL OF HOUSE OFFICERS REGARDING ENDODONTIC TREATMENT (N=100)

Steps of endodontic treatment	Not at all confident n (%)	Not very confident n (%)	Neutral n (%)	Confident n (%)	Very confident n (%)
Diagnosis	1 (1.0%)	5 (5.0%)	28 (28.0%)	58 (58.0%)	28 (28.0%)
Referral for complex endodontic treatment	0 (0.0%)	5 (5.0%)	37 (37.0%)	48 (48.0%)	10 (10.0%)
Achieving anesthesia	0 (0.0%)	3 (3.0%)	13 (13.0%)	63 (63.0%)	21 (21.0%)
Rubber dam placement	16 (16.0%)	28 (28.0%)	23 (23.0%)	28 (28.0%)	5 (5.0%)
Use of electronic apex locator	12 (12.0%)	24 (24.0%)	19 (19.0%)	42 (42.0%)	3 (3.0%)
cleaning and shaping of canal	0 (0.0%)	1 (1.0%)	25 (25.0%)	62 (62.0%)	12 (12.0%)
Placing an inter-appointment dressing	1 (1.0%)	4 (4.0%)	36 (36.0%)	47 (47.0%)	12 (12.0%)
Obturation	0 (0.0%)	6 (6.0%)	18 (18.0%)	59 (59.0%)	17 (17.0%)
Management of flare-ups	8 (8.0%)	32 (32.0%)	27 (27.0%)	30 (30.0%)	3 (3.0%)
Taking and interpreting radiographs	0 (0.0%)	4 (4.0%)	22 (22.0%)	64 (64.0%)	10 (10.0%)
Assessing quality of root canal obturation post-op	1 (1.0%)	7 (7.0%)	39 (39.0%)	48 (48.0%)	5 (5.0%)
Establishing successful communication with patient during treatment	0 (0.0%)	2 (2.0%)	17 (17.0%)	58 (58.0%)	23 (23.0%)
Restoration of endodontically treated teeth	1 (1.0%)	6 (6.0%)	24 (24.0%)	61 (61.0%)	8 (8.0%)

We also compared confidence of house officers between the two institutes, i.e. Rawal institute of health sciences (RIHS) and Islamic international dental hospital (IIDH). We found that house officers of RIHS were more confident than IIDH while performing obturation (p-value, 0.02), managing flare ups (p-value, 0.001) and taking and interpreting radiographs (p-value, 0.011). Table 3.

DISCUSSION

In the present study, overall the house officers showed adequate confidence level in endodontic treatment. However, majority of them had issues dealing with technical skill demanding procedures like placement of rubber dam, determination of working length using electronic apex locator and understanding of and management of flare-ups. This low confidence might be because these procedures are more technique sensitive.[9,10]

Low confidence of students in placement of rubber dam was also found out in other studies. Awooda et al[3] and Tanalp[2] et al who explained low confidence level of students in placement of rubber dam due to unavailability of rubber dam in department, its underuse and due to its difficult application. Rubber dam application is mandatory for endodontics but previous studies and literature show that students and house officers are reluctant in placing it. The disinclination towards use of rubber dam can be explained by several factors like cumbersome application, patients unwillingness for its application.[11,12] However, rubber dam should be encouraged and made compulsory for every patient in standard operating procedures of root canal. This can be done by pre-clinical courses and practice of house officers to refine this skill. As rubber dam is not only an extremely useful procedure in endodontics but also an ethical prerequisite for dentists.[13]

There was in contrast evidence as well, a study by Mathew S et al, showed that students were more confident in placement of rubber dam. This was due to their use of rubber dam from pre-clinics.[4]

Similar to our findings, low confidence level of students while using electronic apex locator was also found out in study conducted by Awooda et al[3], Murray CM et al[5] who explained low confidence because of unavailability of device in the department and many associated factors resulting in its false reading. Regarding determination of working length using electronic

TABLE 2: CONFIDENCE OF HOUSE OFFICERS REARDING ENDODONTIC TREATMENT ACCORDING TO GENDER(ONLY SIGNIFICANT PARAMETERS SHOWN)

Steps of endodontic treatment	Not at all confident n (%)		Not very confident n (%)		Neutral n (%)		Confident n (%)		Very confident n (%)		*P value
	Male	Female	Male	Female	Male	Female	Male*	Female	Male	Female	
Diagnosis	0 (1%)	1 (1.8%)	2 (4.5%)	3 (5.4%)	7 (15.9%)	21 (37.5%)	34(77.3%)	24 (42.9%)	1 (2.3%)	7 (12.5%)	0.01
Achieving anesthesia	0 (0.0%)	0 (0.0%)	2 (4.5%)	1 (1.8%)	2 (4.5%)	11 (19.6%)	34 (77.3%)	29 (51.8%)	6 (13.6%)	15 (26.8%)	0.02
Rubber dam placement	4 (9.1%)	12 (21.4%)	10(22.7%)	18 (32.1%)	10(22.7%)	13 (23.2%)	19(43.2%)	9 (16.1%)	1 (2.3%)	4 (7.1%)	0.02
Use of apex locator	3 (6.8%)	9 (16.1%)	6 (13.6%)	18 (32.1%)	6 (13.6%)	13 (23.2%)	28 (63.6%)	14 (25.0%)	1 (2.3%)	2 (3.6%)	0.004
Cleaning and shaping of canal	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.8%)	7 (15.9%)	18 (32.1%)	34(77.3%)	28 (50.0%)	3 (6.8%)	9 (16.1%)	0.04
Placing inter-appointment dressing	0 (0.0%)	1 (1.8%)	2 (4.5%)	2 (3.6%)	9 (20.5%)	27 (48.2%)	28 (63.6%)	19 (33.9%)	5 (11.4%)	7 (12.5%)	0.02
Managing flare-ups	1 (2.3%)	7 (12.5%)	15(34.1%)	17 (30.4%)	7 (15.9%)	20 (35.7%)	21 (47.7%)	9 (16.1%)	0 (0.0%)	3 (5.4%)	0.002
Assessing quality of root canal obturation	0 (0.0%)	1 (1.8%)	1 (2.3%)	6 (10.7%)	10(22.7%)	29 (51.8%)	31 (70.5%)	17 (30.4%)	2 (4.5%)	3 (5.4%)	0.002

*significant difference among two genders

TABLE 3: CONFIDENCE OF HOUSE OFFICERS REGARDING ENDODONTIC TREATMENT ACCORDING TO INSTITUTE(ONLY SIGNIFICANT PARAMETERS SHOWN)

Steps of endodontic treatment	Not at all confident n (%)		Not very confident n (%)		Neutral n (%)		Confident n (%)		Very confident n (%)		*P- value
	RIHS	IIDH	RIHS	IIDH	RIHS	IIDH	RIHS*	IIDH	RIHS	IIDH	
Root canal obturation	0 (0.0%)	0 (0.0%)	0 (0.0%)	6(12.0%)	7 (14.0%)	11(22.0%)	35(70.0%)	24(48.0%)	8(16.0%)	9(18.0%)	0.02
Managing flare-ups	1 (2.0%)	7(14.0%)	11(22.0%)	21(42.0%)	16(32.0%)	11(22,0%)	22(44.0%)	8 (16.0%)	0 (0.0%)	3 (6.0%)	0.001
Taking and interpreting radiograph	0 (0.0%)	0 (0.0%)	1 (2.0%)	3 (6.0%)	9 (18.0%)	13(26.0%)	39(78.0%)	25(50.0%)	1 (2.0%)	9(18.0%)	0.011

*significant difference between two institutes in terms of confidence

apex locator house officers displayed low confidence because this device is rarely available for house officers and its use is very technique sensitive requiring a lot of experience. It can display false reading because of many compounding factors such as saliva, wet canals, incomplete pulpectomy, and complex root canal anatomy.

Mathew S et al witnessed in contrast findings, in their study students displayed high confidence regarding working length determination using electronic apex locator. This might be because of accessibility protocol and practice and gaining more experience regarding it.[4]

In the present study House officers also showed lower confidence level regarding management of flare-ups. Similar results were found by Tanalp et al[2], Awooda et al[3] and in study by Davey J et al[6], who explained low confidence level of students in management of flare-ups because of miss communication of students with patient and not able to manage it due to an unscheduled visit by a distressed patient.

Sometimes patients come with pain and swelling and unscheduled emergency visit also called a flare-up.[14] There are several reasons for it such as over instrumentation of root canal, pushing debris into periapical area and extrusion of intra-canal content into per apex. The unscheduled visit by an ailing patient is quiet difficult for house officers to manage and they mostly refer it to post graduate students and senior faculty, thus, display low confidence in managing it.[15,16]

In this study confidence level of house officers was also compared according to gender. It was found that male house officers were more confident regarding some steps of endodontics like diagnosis, placement of rubber dam, use of apex locator, cleaning and shaping of canal, placement of inter-appointment dressing according to case type, managing flare-ups and assessing quality of root canal obturation. Similar results were found by Gilmour et al in which male dental students showed more overall confidence than females in complex endodontic procedures.[9]

When confidence level of house officers was compared between two institutes included in this study, it was found that house officers of Rawal Institute of Health Sciences were more confident than house officers of Islamic International Dental hospital regarding obturation, managing flare-ups and taking and interpreting radiographs. This may be due to increased patient flow and more clinical exposure of house officers at RIHS.

Previous literature shows many studies done on quality of endodontic treatment provided by fresh graduates but there are few studies that evaluate house officers self-confidence and how they perceive

endodontics.[17] So the current study adds to the scarce research done on self-confidence of house officers. This gives an idea of dental education quality. This feedback is essential and will be helpful to upgrade the traditional dental education methodology. The new learning process and curricula will then help graduates to overcome the obstacles faced by them and polish their clinical skills and knowledge. These are some of the strengths of the current study.

There were few limitations of this study as well, as this was a cross-sectional study there was a chance of observer bias in terms of true response of the respondents.

In summary it can be stated that house officers were confident regarding easy steps of endodontics but showed less confidence regarding difficult steps. This can be improved by upgrading the teaching methods, carrying out more hands on workshops and introducing problem base learning methods.[18]

CONCLUSION

Based on the study findings, it can be concluded that house officers at RIHS and IIDH were confident in performing endodontics, however, they were found to have low confidence in performing difficult steps like rubber dam application, use of electronic apex locator and management of flare-ups. Before generalization of our results we suggest that studies done in other private and government dental hospitals will be helpful in determining the true shortcomings in dental institutions curriculum and areas that need further development.

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