

Self-confidence Level among Intern Dentists in Performing Endodontic Treatment Procedures in Nepal

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ABSTRACT

Background

Endodontics is considered as one of the most difficult and stressful disciplines in dentistry. This might be due to the complex anatomical variations, recent advances in equipment, technology, materials and lack of self-confidence.

Objective

To determine the self-confidence level among the intern dentists in performing endodontic procedures from six different colleges of Kathmandu University, Nepal.

Method

A descriptive cross-sectional study was conducted among 145 intern dentists. The online questionnaire regarding confidence level (5 point Likert scale) in different endodontic procedures and difficulty level (easy, ok and difficult) with respect to teeth was distributed. For descriptive purpose, frequency and percentage for each response were calculated.

Result

Dental interns were confident in performing majority of the normal endodontic procedures, however, they showed less confidence in performing difficult steps like rubber dam application for anterior (74, 51%) and posterior tooth (91, 62.7%), use of electronic apex locator (89, 61.4%), using rotary files (114, 78.6%), management of flare-ups (86, 59.4%), assessment of quality of post-endodontic treatment (85, 58.5%), recall periods (75, 51.6%) and performing post and core (82, 56.6%). Likewise, upper first molars (84, 57.9%) and second molars (104, 71.7%) were found to be the most difficult teeth to treat.

Conclusion

It can be concluded that majority of the dental interns were confident in performing basic endodontic procedures, however, they were found to have low confidence in performing difficult steps. Further training and exposure should be incorporated to increase their confidence level.

KEY WORDS

Confidence level, Endodontic procedures, Intern dentists, Kathmandu University

INTRODUCTION

With the concept of ultimate conservation and preservation of tooth structure and increased patient awareness level, endodontic treatment is considered to be one of the most important procedures in dentistry. Dental students after completing four and half years followed by one year of compulsory rotational internship Bachelor of Dental Surgery (BDS) program is expected to be proficient in theoretical knowledge, clinical competencies as well as have interpersonal skills.¹ One year of compulsory rotational internship is very crucial and provides an opportunity to have on-the-job training experience on various aspects of diagnosis, formulating a reasonable treatment plan and carrying out a safe and quality treatment.² During this period students get an opportunity to gain skills in a semi-independent manner compared to clinical years where they are supervised by the department faculty.³

Undergraduate dental students and general dental practitioners consider endodontics as one of the most difficult and stressful disciplines in dentistry. This might be due to the complex anatomical variations, expansion in terms of clinical management of pulpal and periapical diseases, recent advances in equipment, technology, materials and lack of self-confidence.⁴

Self-confidence plays a vital role in providing endodontic treatment and low self-confidence affects the daily practice of health professionals. Feedback and suggestions from undergraduate students are very important for improving the university curriculum and learning methodology.⁵ Therefore, this study is designed to determine the self-confidence level among the intern dentists in performing endodontic treatment procedures from different colleges of Kathmandu University (KU), Nepal.

METHODS

A descriptive cross-sectional study was conducted among 145 intern dentists who have graduated on November 2020 from six different dental colleges under KU. After obtaining ethical clearance from the Institutional Review Committee of Kathmandu University School of Medical Sciences (09/21), a pretested multiple choice questionnaire used by Alrahabi and Awooda et al. were adopted for data collection.^{6,7} The questionnaire consisted of two parts; first part included questions regarding confidence level in different procedures of non surgical root canal treatment. The level of confidence was classified using a 5 point Likert scale from 1 to 5 where, 1 = Very little confidence, 2 = Little confidence 3 = Neutral 4 = Confident 5 = Very confident. Second part included questions regarding level of case difficulty which was classified as easy, ok and difficult. Participation was voluntary, and students were informed that they could refuse for participation. Questions were created in google form and distributed to the intern dentists through electronic mails and viber application software.

Data were organized, and entered in Microsoft Excel sheet and analyzed using Statistical Package for Social Sciences (SPSS) version 20. Mean and standard deviation were calculated for quantitative data. For descriptive purpose, frequency and percentage for each response of questionnaire were calculated.

RESULTS

A total of 165 dental interns who have completed their rotary internship in November 2020 was provided with the questionnaire. One hundred forty-five of them filled the online google forms with a response rate of 87.9%. The mean age of the participants was 24.10±0.58. Table 1 shows the results for the questions regarding confidence level in performing different procedures of non surgical root canal treatment. The results of questions regarding the level of case difficulty with respect to teeth are summarized in Table 2.

Table 1. Responses of dental interns on confidence level in performing different procedures of non surgical root canal treatment n (%)

Endodontic Procedures	Very little confidence	Little confidence	Neutral	Confident	Very confident
Diagnosis of cases needing endodontic treatment	0 (0)	11 (7.6)	17 (11.7)	109 (75.2)	8 (5.5)
Knowing when to refer patients for more complicated endodontic treatment	1 (0.7)	8 (5.5)	15 (10.3)	102 (70.3)	19 (13.1)
Achieving anesthesia for endodontic treatment	1 (0.7)	12 (8.3)	29 (20)	87 (60)	16 (11)
Placement of the rubber dam in					
a. Anterior teeth	26 (17.9)	48 (33.1)	28 (19.3)	37 (25.5)	6 (4.1)
b. Posterior teeth	36 (24.8)	55 (37.9)	38 (26.2)	12 (8.3)	4 (2.8)
Determining the working length of each canal using an electronic apex locator	37 (25.5)	52 (35.9)	28 (19.3)	22 (15.2)	6 (4.1)
Cleaning and shaping the root canal system using					
a. Hand files	2 (1.4)	17 (11.7)	30 (20.7)	82 (56.6)	14 (9.7)
b. Rotary files	68 (46.9)	46 (31.7)	25 (17.2)	4 (2.8)	2 (1.4)
Performing positive pressure irrigation	3 (2.1)	27 (18.6)	20 (13.8)	90 (62.1)	5 (3.4)
Placing an inter-appointment dressing	1 (0.7)	12 (8.3)	17 (11.7)	102 (70.3)	13 (9)

Root canal obturation	0 (0)	19 (13.1)	26 (17.9)	91 (62.8)	9 (6.2)
Managing and understanding endodontic emergencies (flare-ups) appropriately	4 (2.8)	82 (56.6)	10 (6.8)	43 (29.7)	6 (4.1)
Taking and interpreting					
a. Pretreatment radiographs	1 (0.7)	8 (5.5)	39 (26.9)	83 (57.2)	14 (9.7)
b. Intra-treatment radiograph	2 (1.4)	10 (6.9)	44 (30.3)	75 (51.7)	14 (9.7)
c. Post-treatment radiographs	1 (0.7)	8 (5.5)	30 (20.7)	91 (62.8)	15 (10.3)
Assessment of the quality of endodontic treatment postoperatively	10 (6.8)	75 (51.7)	10 (6.8)	45 (31)	5 (3.4)
Determination of correct recall period for patient	5 (3.4)	70 (48.2)	13 (8.9)	50 (34.4)	7 (4.8)
Rehabilitation of endodontically treated teeth by					
a. Simple restoration	3 (2.1)	9 (6.2)	19 (13.1)	82 (56.6)	32 (22.1)
b. Core build up	1 (0.7)	25 (17.2)	27 (18.6)	76 (52.4)	16 (11)
c. Using post and core	33 (22.8)	49 (33.8)	27 (18.6)	25 (17.2)	11 (7.6)
d. Crown	8 (5.5)	32 (22.1)	20 (13.7)	75 (51.7)	10 (6.8)

Table 2. Responses on level of case difficulty in performing root canal treatment with respect to teeth n (%)

Tooth	Easy	Ok	Difficult
Upper incisors	129 (89)	16 (11)	0 (0)
Lower incisors	116 (80)	28 (19.3)	1 (0.7)
Upper canine	109 (75.2)	33 (22.8)	3 (2.1)
Lower canine	103 (71)	41 (28.3)	1 (0.7)
Upper premolars	41 (28.3)	88 (60.7)	16 (11)
Lower premolars	83 (57.2)	50 (34.5)	12 (8.3)
Upper 1 st molar	12 (8.3)	49 (33.7)	84 (57.9)
Upper 2 nd molar	3 (2.1)	38 (26.2)	104 (71.7)
Lower 1 st molar	28 (19.3)	98 (67.6)	19 (13.1)
Lower 2 nd molar	8 (5.5)	87 (60)	50 (34.5)

DISCUSSION

Kathmandu University runs a dental program through its six affiliated dental colleges namely, College of Medical Sciences (Bharatpur), Kantipur Dental College, Kathmandu Medical College, Kathmandu University School of Medical Sciences, Nepal Medical College and Nobel Medical College. The duration of the BDS program in Nepal is of four and half years followed by one year of compulsory rotational internship.³ The dental curriculum requires students to be

proficient in theoretical knowledge, clinical competencies as well as have interpersonal skills.⁸ Being said this, the curriculum of KU is systematic, community-oriented, integrated, student -centered and electives embodied.⁹ According to the present scenario, many freshly graduated BDS feel the need to work as an apprentice or even as a volunteer with a senior and experienced dentists for gaining confidence and additional skills. Self-assessment of the intern dentist would be an important means to make a realistic evaluation of the dental curriculum and assessment of the effectiveness of specific courses.⁸ Therefore, this study was conducted to assess the confidence level among dentists who have recently finished their internship in performing various non surgical endodontic procedures. Recently graduated dentists were chosen because students perform endodontic procedures in a patient just during their two months clinical internship posting. The study was conducted in dental colleges under KU as all the colleges follow the same curriculum guidelines for teaching their students. All the colleges have well-qualified full-time teaching faculties as specified by KU and well equipped dental hospital with a good flow of patients adequate for dental students, interns, dental officers and consultants.

Endodontic treatment is considered to be one of the most stressful procedures for undergraduates and general practitioners. In the mean time, it is also the most commonly done procedure in clinical practice. Therefore, it is necessary that the undergraduates should have good confidence in theoretical as well as clinical skills in endodontics. In general, most interns in the current study were confident in performing most of the endodontic procedures which reflect the good output of the endodontic curriculum and teaching learning-methodology of KU. On the other hand, they were less confident in some specific procedures.

An accurate diagnosis is a gateway to formulate a proper treatment plan. In this study majority of the intern dentist were confident in diagnosing the cases needing endodontic treatment (109, 75.2%), in referring patients for more complicated endodontic treatment (102, 70.3%) and achieving anesthesia for endodontic treatment (87, 60%). This might be attributed to more clinical exposure as the diagnosis part is covered in Oral Medicine too and anesthesia in Oral Surgery. In this study intern dentists showed low confidence in applying rubber dam both in anterior (74, 51%) and posterior tooth (91, 62.7%) which is in congruent with studies done by Awooda et al. and Tanalp et al.^{7,10} They concluded low confidence level of students in the placement of rubber dam due to limited availability of rubber dam in the department, its underuse and due to its difficult application. On the contrary, a study done by Doumani et al. found high confidence in applying rubber dam.¹¹ The low confidence in this study might be due to the failure to refine their application skill in patients as rubber dam application is mostly practiced only in phantom head and not practiced routinely in a clinical scenario.

Regarding the working length determination using electronic apex locator, the intern dentists showed little confidence (89, 61.4%) which is similar to the study done by Qamar et al. and Murray et al.^{12,13} This low confidence might be attributed to unavailability of the device for interns in all the dental colleges and technique sensitivity associated with its use. Interns practice the radiographic method frequently for working length determination. In contrast, Mathew et al. found high confidence in determining working length using an electronic apex locator.¹⁴ This might be because of the availability, practice and experience regarding its use. In this study, they were confident enough in cleaning and shaping the root canal systems using hand files (82, 56.6%), performing positive pressure irrigation (90, 62.1%), placing an inter-appointment dressing (102, 70.3%) and doing root canal obturation (91, 62.8%). However, they showed a low level of confidence in cleaning and shaping of the root canal using rotary files (114, 78.6%) which is in contrast to the study done by Doumini et al. which showed that the interns are confident in using rotary instruments.¹¹ This might be due to the difference in curriculum. Students practice only the traditional method of cleaning and shaping using ISO 2% hand files.

Radiographs play a vital role in endodontics. Most of the intern dentists were confident in taking and interpreting pretreatment (83, 57.2%), intra-treatment (75, 51.7%) and post-treatment (91, 62.8%) radiograph. In the present study intern dentists were not so confident (86, 59.4%) regarding the management of flare-ups. Similar results were found by Awooda et al. and Tanalp et al. who explained low confidence level in the management of endodontic emergencies was due to the failure of the students to give prior information regarding flare-ups and unable to manage it due to an unscheduled visit by a distressed patient.^{7,10} It can be speculated that flare-ups may be encountered more frequently in RCT done by students, possibly due to inexperience leading to some procedural errors such as over-instrumentation or extrusion of irrigants and intracanal debris into the periapical region.

The result revealed a low confidence level in the assessment of the quality of endodontic treatment postoperatively (85, 58.5%) and determining the correct recall period (75, 51.6%) which is similar to the result found by Alrahabi.⁶ This might probably be due to inadequate clinical exposure and limited posting time. Treatment success relies on an effective coronal seal that will prevent canal reinfection and an adequate restoration that will resist functional stresses applied to the remaining tooth structure. In this study, intern dentists were confident in doing simple post

endodontic restorations (82, 56.6%), core build-up (76, 52.4%) and tooth preparation for crown placement (75, 51.7%) but showed less confidence in performing post and core (82, 56.6%). This might be due to inadequate clinical exposure.

In this study, we found that upper molars were the most difficult teeth for doing root canal treatment; (84, 57.9%) for first molar and (104, 71.7%) for second molar. This is an expected result which is in congruent with studies done by Honey et al. and Patel et al.^{15,16} Root canal treatment of upper molars is difficult because of their location, which does not allow to see directly and complex anatomy.¹⁰

This study has some limitations. As this was a questionnaire-based cross-sectional study there might be a chance of observer and respondents bias in terms of the actual response. In addition, real clinical practice records were not obtained from interns which could make a difference in confidence level. Moreover, COVID-19 pandemic situation might also be the confounding factor for acquiring clinical skills, competencies and gaining confidence level. The findings of the present study cannot be generalized because of the small sample size thus, signifying the necessity of further investigations.

CONCLUSION

Within the limitation of this study, it can be concluded that dental interns of different dental colleges under Kathmandu University were confident in performing a majority of the normal endodontic treatment, however, they were found to have low confidence in performing difficult procedures like rubber dam application, use of electronic apex locator, using rotary biomechanical preparation instruments, management of flare-ups, assessment of the quality of endodontic treatment, recall periods and post endodontic restorations using post and core. Endodontics should be enhanced by incorporating more preclinical and clinical sessions and using new teaching methods which make students familiar with the recent advances in the undergraduate curriculum.

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