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Endodontic Continuing Education of Dental Practitioners in Croatia: A Nationwide Survey

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Abstract

AIM: This study aims to assess the state of endodontic continuing education (ECE) among dental practitioners in Croatia and identify factors influencing participation in such education.

METHODS: A questionnaire was sent to all dental offices in Croatia, yielding 819 responses. The data were analyzed descriptively and statistically modeled.

RESULTS: Most respondents had participated in some form of ECE during their careers. However, in the past 5 years, only about 78% had engaged in such education, with participation decreasing by 2% for each additional year of practice. Male practitioners had significantly less continuing education in the past 5 years, particularly in private clinics, dental clinics with concession contracts, and certain regions. Practitioners who performed more endodontic treatments reported higher levels of continuing education. The endometer was the only modern technique consistently used by about 60% of practitioners with continuing dental education.

CONCLUSION: Continuing education in endodontics should be more strongly promoted among practitioners with longer careers, particularly men.

Introduction

Continuing professional development (CPD) is mandatory for dental practitioners in Croatia, as well as in most European countries [1], [2], [3], [4], [5] and the U.S. [6]. The primary goal of CPD is to ensure high standards of patient care by continuously updating dentists' knowledge and skills [7], [8], [9], [10], [11], [12], [13]. Moreover, CPD has been linked to important secondary outcomes, such as reducing opioid-related mortality through improved pain management practices [14], [15].

Globally, the effectiveness of CPD programs has been questioned, with several studies investigating the real impact of educational interventions [16], [17], including the growing role of online continuing dental education [18]. A significant body of literature addresses the status of endodontic practices among general dental practitioners [19], [20], [21], [22], [23], [24], with research focusing on knowledge gaps, skill development, and the need for updated training. In addition, collegial feedback within clinical settings has been explored as a means to enhance CPD outcomes [25].

In Croatia, previous research has mainly focused on the prescribing practices of dental professionals, including their contribution to national medication consumption [26], [27], as well as the patterns of antibiotic use in endodontic treatments (ET) [28], [29], [30], [31], [32]. Other studies have examined referrals for surgically managed endodontic cases [33], the preparedness of dentists to handle medical emergencies [34], and the knowledge of pediatricians in managing dental trauma [35]. Occupational injuries in dental practices [36] and dental students' awareness of oncology patient care [37] have also been researched. In addition, research has highlighted the adoption of new endodontic techniques in Croatian dental practices [38], as well as the need for further CPD on maintaining dental records for forensic purposes [39].

CPD plays a vital role in ensuring that dental practitioners stay informed about emerging knowledge, technologies, and procedures and that they integrate these advances into clinical practice to provide optimal patient care. This study aims to assess the current state of endodontic continuing education (ECE) among dental practitioners in Croatia, identifying the factors that

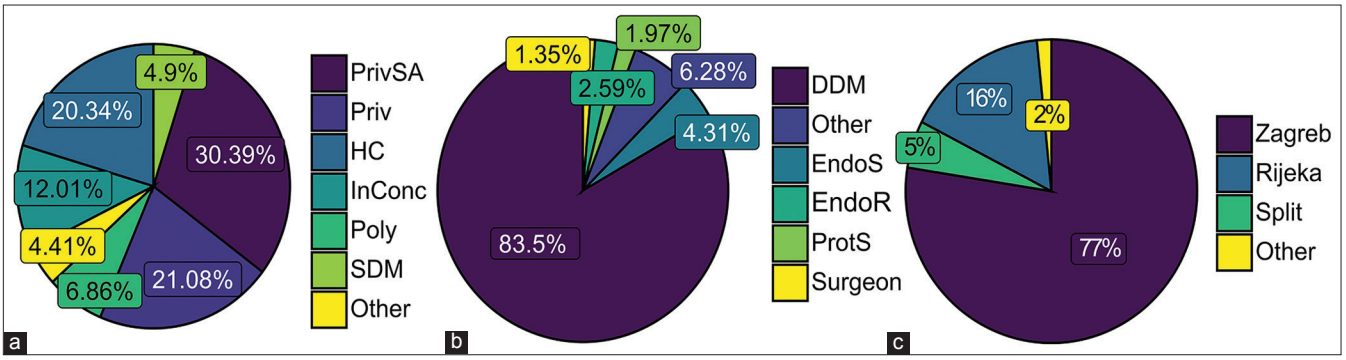

Figure 1: Percentage of responders per (a) Office type, (b) Degree in clinical education, (c) University

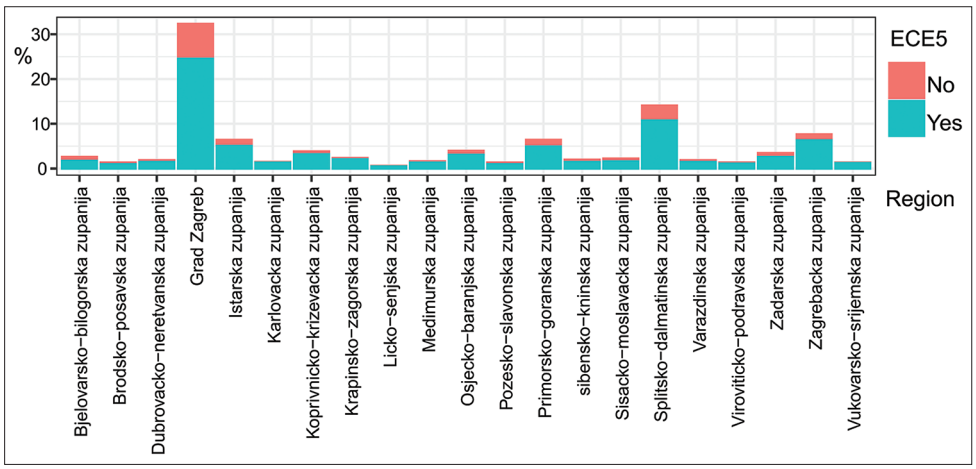

Figure 2: Percentage of responders per region and endodontic continuing education in the past 5 years

influence participation in such programs. The ultimate goal is to enhance ECE programs and, consequently, the quality of care provided by Croatian dental professionals.

Materials and Methods

Questionnaire

A questionnaire was distributed to approximately 3000 dental practitioners in Croatia. The number of respondents was estimated using data from the Croatian Institute of Public Health and the Croatian Health Statistics Yearbook. A total of 819 responses were collected, representing a 27% response rate. The questionnaire can be accessed at https://forms.gle/nmUeQizSoN2U5SNYA.

Participants provided demographic information, including sex (female - F and male - M), years of practice, and educational qualifications (Doctor of Dental Medicine [DDM], Specialist in Endodontics [EndoS], Resident in Endodontics [EndoR], Prosthetics Specialist [ProtS], Oral Surgeon [Surgeon], and Other). In addition, participants indicated the type of dental office where they practiced, including Health Center (HC), Dental Clinic with Concession Contract (InConc), Private Clinic (Priv), Private Clinic with State Health Fund Contract (PrivSA), Dental Polyclinic (Poly), and School of Dental Medicine (SDM).

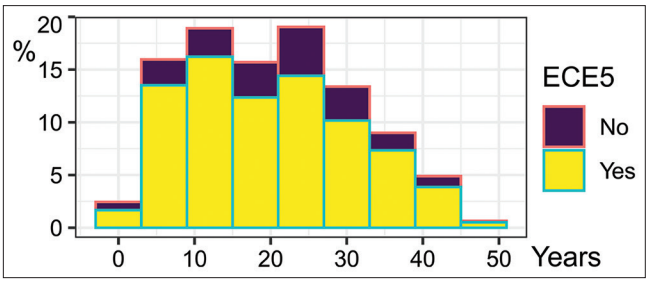

Figure 3: Histogram of responders' years of practice and endodontic continuing education in the past 5 years

The questionnaire distinguished between practitioners who had received ECE at any point in their careers and those who had participated in ECE in the past 5 years (ECE5). Further questions covered various aspects of endodontic clinical practices, such as the use of endometers and rubber dams, the use of X-ray imaging and cone-beam computed tomography (CBCT), and preferences for manual, mechanical, or combined instrumentation methods.

Statistical methods

The statistical analysis was conducted using the R Project for Statistical Computing (version 4.3.0)

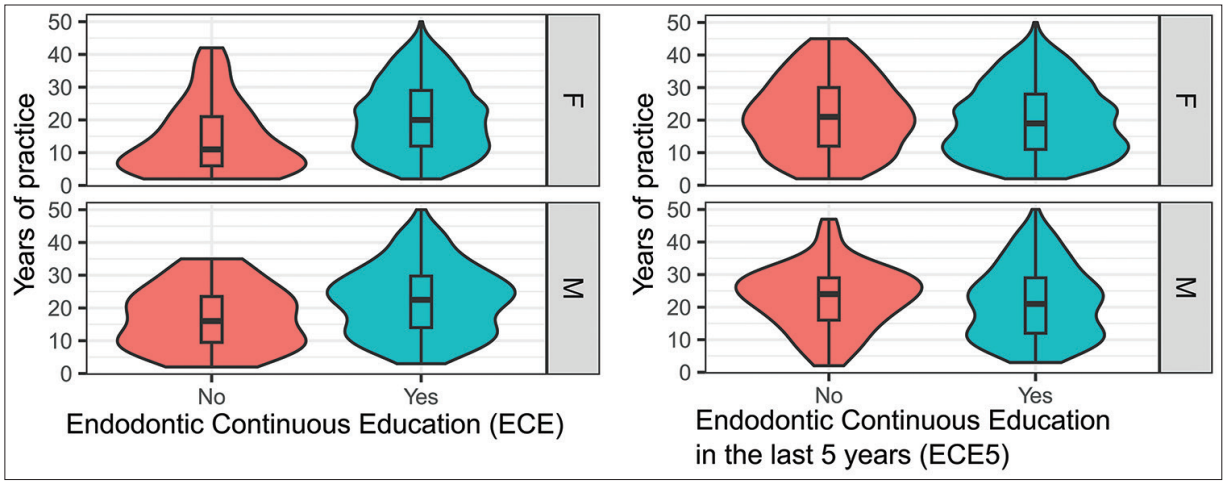

Figure 4: Endodontic continuing education (left) and endodontic continuing education in the past 5 years (right) per sex and years of practice

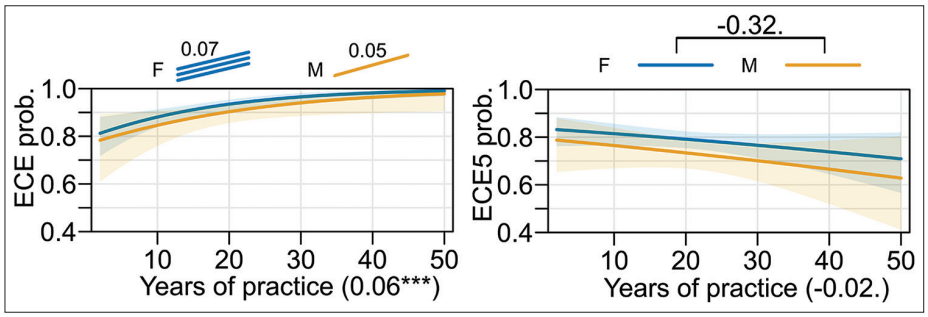

Figure 5: Effects of sex and years of practice on continuing education (left Endodontic continuing education; right endodontic continuing education in the past 5 years)

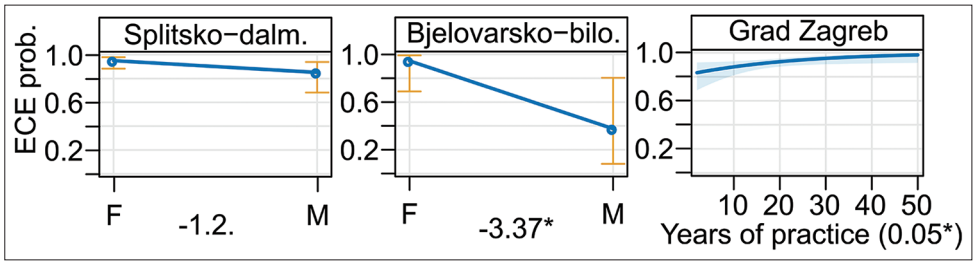

Figure 6: Regions and endodontic continuing education

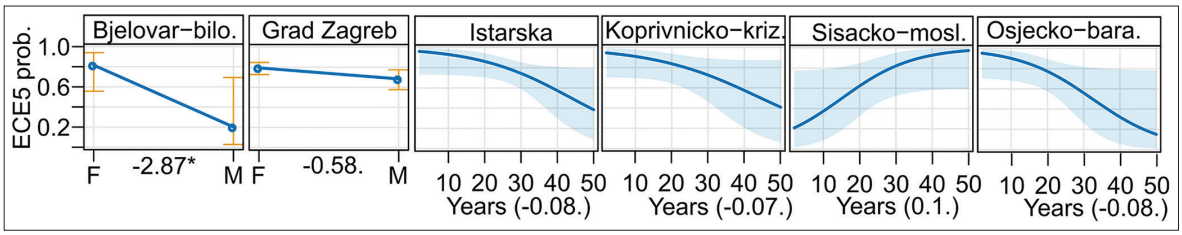

Figure 7: Regions and endodontic continuing education in the past 5 years

along with its Survey package. The use of the specialized Survey package was necessary due to the relatively large sample size in comparison to the total population, making the finite population correction factor significant.

First, the distribution of practitioners by sex, years of practice, region, and ECE participation was examined. The χ^2 test was applied to assess relationships between categorical variables, while Analysis of Variance was used to examine relationships between continuous and categorical variables. Logistic regression models were developed to identify factors influencing ECE participation. All regression models were adjusted for sex and years of practice. For all categorical variables except sex, sum contrasts were used, meaning that the categories were contrasted with the overall mean.

Results are reported as log odds (logit), with significance levels indicated as follows: ***p < 0.001, **p < 0.01, *p < 0.05, and dot for p<0.1. Slopes in the regression analysis are denoted by the corresponding number of stripes, with a dotted stripe representing a significance level of 0.1. Error bars or bands in the plots represent 95% confidence intervals.

Results

Characteristics of practitioners and population parameter estimates

Table 1 provides general data about the respondents, while Figures 1-3 describe variables with more than two levels. Figure 4 shows violin plots of ECE and ECE5 based on sex and years of practice. There does not appear to be a significant effect of sex or years in practice on ECE5, although there is a slight decrease with years of practice for both sexes. However, male respondents are slightly older, necessitating regression analysis correction for years in practice.

Table 1: Responders' characteristics

Characteristics	Quantity	
	Mean (%)	SE
Sex		
Male	29.2	0.01
Female	70.8	0.02
Years of practice		
ECE	20.8	0.32
No	8.3	0.01
Yes	91.7	0.01
ECE5		
No	22.2	0.01
Yes	77.8	0.01
Office status		
Polyvalent	87.7	0.01
Specialist	12.3	0.01
Performing endo treatments	96.2	0.006
Number of doctors per office	2.4	0.33

SE: Standard error, ECE: Endodontic continuing education, ECE5: Endodontic continuing education in the past 5 years

Regression analysis

Figures 5-12 present the regression analysis results. All relevant predictor variables were tested against ECE and ECE5.

As expected, the probability of having ECE significantly increases with years of practice for both males and females (Figure 5). However, ECE5 drops with each additional year of practice by approximately 2% ($e^{-0.02}-1 = -0.02$). There is slight evidence suggesting that males have significantly less ECE5 than females, with 27% lower odds ($e^{-0.32}-1 = -0.27$).

Although some variation in ECE5 is observed between regions (Figure 2), no significant differences between regions were found overall (Figure 7). However, significant drops in ECE5 with years of practice were observed in three regions, except in Sisacko-Moslovacka, where a significant increase in ECE5 with years was detected. In Figure 6, the effect of sex on ECE is significant in two regions, while an increase with years of practice is only significant in the Grad Zagreb region (the capital of Croatia).

No significant differences were found among degrees in clinical education (Figure 8). DDMs demonstrated high ECE levels and a significant increase with years of practice.

There is slight evidence that PrivSA offices have more ECE than other office types (Figure 9). Both PrivSA and Priv clinics have shown a significant increase in ECE over the years. Poly and PrivSA clinics have significantly higher ECE5 rates than other office types, while SDM (School of Dental Medicine) shows a significantly lower probability of ECE5. Interestingly, male practitioners in InConc have significantly higher ECE5, while in Priv clinics, females are more likely to have ECE5. Polyvalent offices exhibit a significant increase in ECE over the years, while male specialists are less likely to have ECE5 (Figure 10).

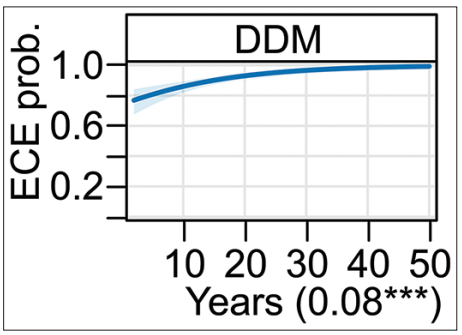

Figure 8: Degree in clinical education and endodontic continuing education

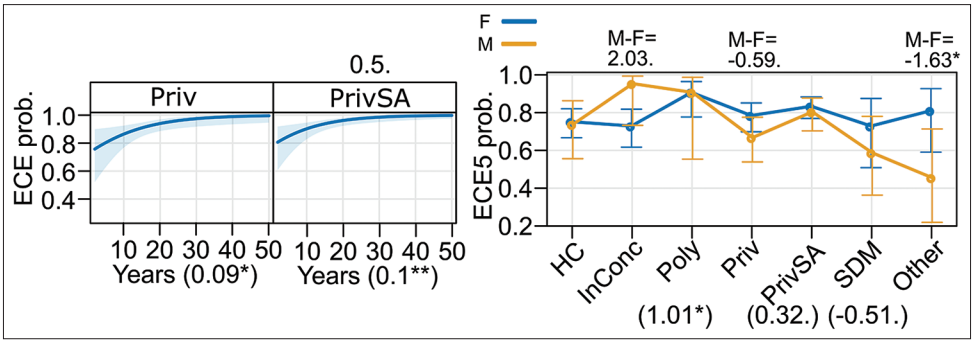

Figure 9: Office organization and endodontic continuing education (left endodontic continuing education; right endodontic continuing education in the past 5 years)

No significant differences were observed among practitioners from different universities (Figure 11). For major Croatian universities (Zagreb, Split, Rijeka), the probability of ECE increases with years, though ECE5 significantly decreases for practitioners from Zagreb as they gain years of practice. Among Split University graduates, males are less likely to have ECE.

Practitioners who perform more ET per month tend to have more ECE and ECE5, although the increase is not significant for males with ECE (Figure 12). However, the probability of males having ECE is still quite high (~0.9 or greater).

Relationship between ECE and novel endodontic methods

Figure 13 shows the percentage of practitioners with ECE or ECE5 per their usage of various endodontic technologies. Endometer stands out as the only technique showing consistent usage of 60% by practitioners with ECE or ECE5. CBCT usage is rare, while most respondents with ECE rarely use XR imaging 12–24 months after treating teeth with significant periradicular lesions. About 30% of respondents with ECE5 never use a rubber dam, and around 20% never use rotary instrumentation.

Discussion

As shown in Table 1 and Figure 3, the distribution of respondents by sex and years of practice is uneven.

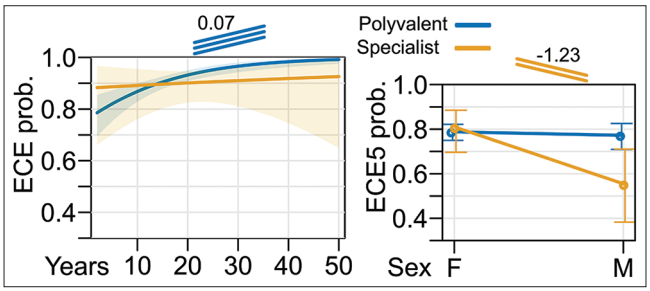

Figure 10: Office status and endodontic continuing education (left endodontic continuing education; right endodontic continuing education in the past 5 years)

Therefore, all regression models were adjusted for these two variables. The larger number of female respondents aligns with the greater representation of women among practitioners. The smaller number of respondents at the extremes of the years-of-practice histogram (Figure 3) indicates that both newer and more experienced practitioners were less likely to participate in the survey, a trend also observed in previous studies [40].

According to Table 1, nearly all respondents perform ETs, with approximately 92% having some form of ECE, and 78% having had ECE5. For comparison, in 2003 in New Zealand, 76% of respondents had ECE in the prior 3 years. Most respondents (88%) work in polyvalent offices. Figure 1 shows that over 50% of respondents work in Priv and PrivSA offices, followed by HC (20%), InConc (12%), Poly (7%), and SDM (5%). Among educational qualifications (Figure 1b), DDM is the most prominent, while EndoS, EndoR, ProtS, and Surgeon share smaller proportions in decreasing order. In addition, 77% of respondents studied in Zagreb (panel C), Croatia's largest university.

Figure 4 highlights the influence of sex and years on ECE and ECE5. For both males and females, ECE increases with years of practice, but the opposite is true for ECE5. This trend is confirmed by regression analysis (Figure 5). The decline in ECE5 with age may suggest that older practitioners feel that they need less CPD due to greater knowledge, but it could also mean that they are less informed about recent advances. Conversely, younger respondents, likely influenced by recent university studies and clinical practice, may have more ECE5. The COVID-19 pandemic could also have disproportionately affected ECE5 among older practitioners [41], [42].

We observed a slight but significant reduction in ECE5 among males (Figure 5), a finding that contrasts with a previous UK study that found less CPD among females [43]. Therefore, it may be beneficial to target males in Croatia for increased CPD participation, particularly in regions such as Grad Zagreb, Splitsko-dalmatinska, and Bjelovarsko-bilogorska, where significant differences were detected (Figures 6 and 7).

Interestingly, no significant differences in ECE5 were found across degrees of clinical education,

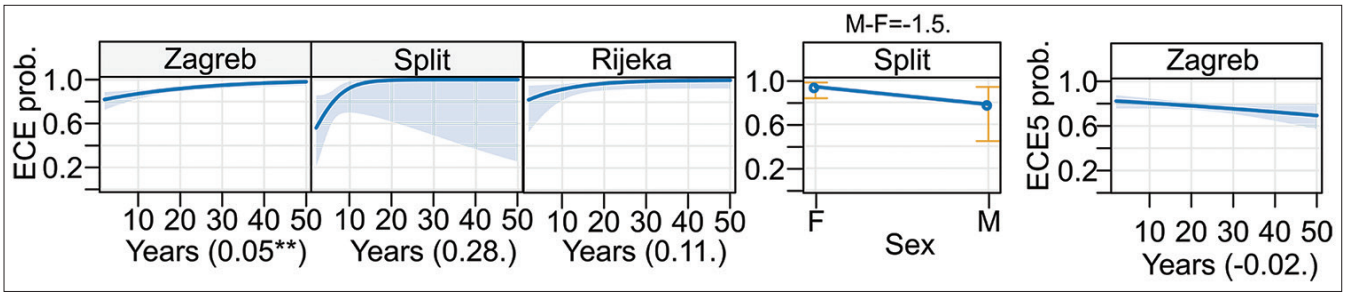

Figure 11: Universities and endodontic continuing education

although DDMs show a high ECE rate and an increase with years (Figure 8). PrivSA offices slightly outperform other types in terms of ECE, with Poly and PrivSA clinics showing significantly higher ECE5. SDM shows significantly lower probability of ECE5, which could be because EndoS responders in SDM interpreted ECE5 as education intended for non-specialists. In addition, male specialists and male Split graduates were less likely to have ECE5 (Figures 9-11).

It is encouraging that practitioners who perform more ET per month are more likely to have ECE, suggesting that more qualified practitioners are treating a larger number of cases (Figure 12).

It is important to recognize the limitations of this study. One major limitation is the distinction only between ECE and ECE5, without considering other potential variables such as personal motivation and interest in continuing education. In addition, the study does not account for time spent reading professional or scientific journals, which could also influence a practitioner's knowledge. Future research could explore different forms of CPD and include these aspects for a more nuanced understanding of continuing education practices among dental practitioners.

Conclusions

This study investigates the influence of sex, years of practice, region, office type, clinical education, university attended, and modern techniques on ECE and ECE5 among dental practitioners in Croatia. After 20 years of practice, about 90% of practitioners had some form of ECE, but within the past 5 years, this number is around 78% and it drops with age. The findings suggest that ECE programs should focus on male practitioners, particularly in regions such as Splitsko-dalmatinska, Grad Zagreb, and Bjelovarsko-bilogorska, as well as those in private offices or who studied at Split University. ECE generally increases with years of practice, while ECE5 decreases. Furthermore, practitioners who perform more ETs tend to have more education. Finally, the use of modern endodontic techniques, apart from endometers, is not nearly as high as it should be among practitioners with ECE or ECE5.

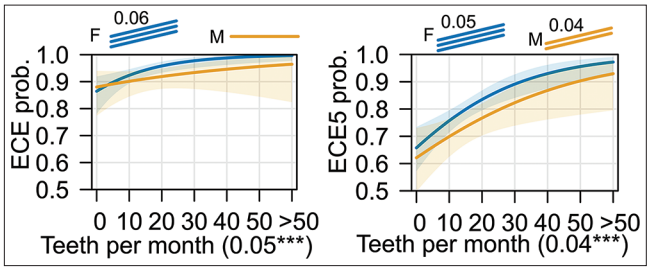

Figure 12: Number of endodontic treatments per month and endodontic continuing education (left endodontic continuing education; right endodontic continuing education in the past 5 years)

References

1. Meli Attard A, Bartolo A, Millar BJ. Dental continuing professional development-Part I: background on dental continuing professional development in Europe. Eur J Dent Educ. 2022;26(3):539-45. https://doi.org/10.1111/eje.12730
PMid:34843152
2. Meli Attard A, Bartolo A, Millar BJ. Dental continuing professional development-Part II: The Malta CPD Pilot Project. Eur J Dent Educ. 2022;26(3):546-62. http://doi.org/10.1111/eje.12731
PMid:34843163
3. Bullock A, Kavadella A, Cowpe J, Barnes E, Quinn B, Murphy D. Tackling the challenge of the impact of continuing education: An evidence synthesis charting a global, cross-professional shift away from counting hours. Eur J Dent Educ. 2020;24(3):390-7. https://doi.org/10.1111/eje.12514
PMid:32056338
4. Komar D. Dental medical education in Croatia. Croat Med J. 2011;52:663-4. https://doi.org/10.3325%2Fcmj.2011.52.663
PMID: 22180263
5. Cervero RM, Artino AR Jr., Daley BJ, Durning SJ. Health professions education graduate programs are a pathway to strengthening continuing professional development. J Contin Educ Health Prof. 2017;37(2):147-51. https://doi.org/10.1097/CEH.0000000000000155
PMid:28562504
6. Kuthy RA, Mitchell LG. Continuing education credit hours taken by general practice dentists. J Contin Educ Health Prof. 1999;19:97-104. https://doi.org/10.1002/chp.1340190205
7. Nazir M, Al-Ansari A, Alabdulaziz M, AlNasrallah Y, Alzain M. Reasons for and barriers to attending continuing education activities and priorities for different dental specialties. Open

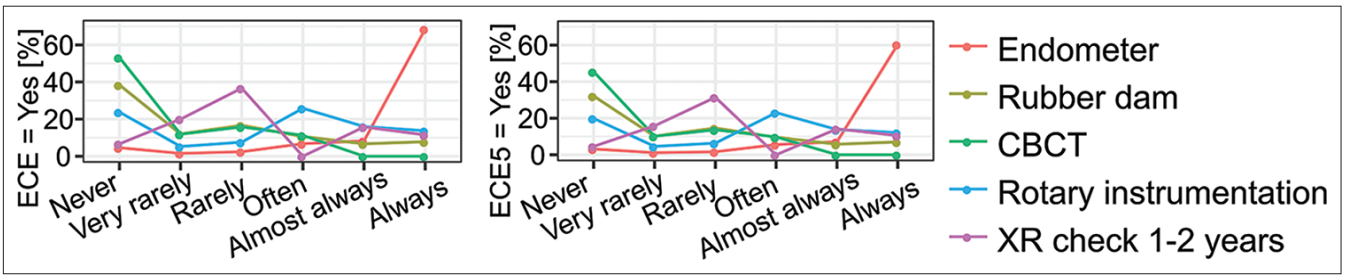

Figure 13: Continuing education and modern endodontic techniques (percentage of practitioners who responded yes to endodontic continuing education (left) and endodontic continuing education in the past 5 years (right), per different method

Access Maced J Med Sci. 2018;6(9):1716-21. https://doi.org/10.3889/oamjms.2018.373
PMid:30337997

8. Kavadella A, Kossioni AE, Tsiklakis K, Cowpe J, Bullock A, Barnes E, *et al*. Recommendations for the development of e-modules for the continuing professional development of European dentists. Eur J Dent Educ. 2013;17(Suppl 1):45-54. https://doi.org/10.1111/eje.12039
PMid:23581739
9. Bullock A, Bailey S, Cowpe J, Barnes E, Thomas H, Thomas R, *et al*. Continuing professional development systems and requirements for graduate dentists in the EU: Survey results from the DentCPD project. Eur J Dent Educ. 2013;17(1):e77-81. https://doi.org/10.1111/j.1600-0579.2012.00764.x
PMid:23279418
10. Snjaric D, Carija Z, Braut A, Halaji A, Kovacevic M, Kuis D. Irrigation of human prepared root canal--ex vivo based computational fluid dynamics analysis. Croat Med J. 2012;53(5):470-9. https://doi.org/10.3325/cmj.2012.53.470
PMid:23100209
11. Persić R, Kqiku L, Brumini G, Husetić M, Pezelj-Ribarić S, Brekalo Prso I, *et al*. Difference in the periapical status of endodontically treated teeth between the samples of Croatian and Austrian adult patients. Croat Med J. 2011;52(6):672-8. https://doi.org/10.3325/cmj.2011.52.672
PMid:22180265
12. Matijević J, Cizmeković Dadić T, Prpic Mehicic G, Ani I, Slaj M, Jukić Krmek S. Prevalence of apical periodontitis and quality of root canal fillings in population of Zagreb, Croatia: A cross-sectional study. Croat Med J. 2011;52(6):679-87. https://doi.org/10.3325/cmj.2011.52.679
PMid:22180266
13. Ohr SO, Maguire D, Lord N, Talluri C, Solman A. A unique model for developing continuing education resources for health professionals in geographically dispersed health organizations. J Contin Educ Health Prof. 2021;41(3):221-5. https://doi.org/10.1097/CEH.0000000000000320
PMid:34460444
14. Wiener RC, Waters C, Bhandari R, Trickett Shockey AK, Panagakos F. U.S. Re-licensure opioid/pain management continuing education requirements in dentistry, dental hygiene, and medicine. J Dent Educ. 2019;83(10):1166-73. https://doi.org/10.21815/JDE.019.115
PMid:31182622
15. Kahn N, Chappell K, Regnier K, Travlos DV, Auth D. Acollaboration between government and the continuing education community tackles the opioid crisis: Lessons learned and future opportunities. J Contin Educ Health Prof. 2019;39(1):58-63. https://doi.org/10.1097/CEH.0000000000000231
PMid:30614958
16. Neukermans M, Vanobbergen J, De Bruyne M, Meire M, De Moor RJ. Endodontic performance by Flemish dentists: Have they evolved? Int Endod J. 2015;48(12):1112-21. https://doi.org/10.1111/iej.12409
PMid:25382265
17. Chehabeddine N, Lahoud N, Noujeim ZE, Zeidan RK, Hleyhel M, Saleh N. Effect of an educational intervention among Lebanese dentists on antibiotic prescribing: A randomized controlled study. Clin Oral Investig. 2022;26(7):4857-69. https://doi.org/10.1007/s00784-022-04453-6
PMid:35348880
18. Francis B, Mauriello SM, Phillips C, Englebardt S, Grayden SK. Assessment of online continuing dental education in North Carolina. J Contin Educ Health Prof. 2000;20(2):76-84. https://doi.org/10.1002/chp.1340200203
PMid:11232223
19. Malmberg L, Sturestam A, Fagring A, Björkner AE. Endodontic follow-up practices, sources of knowledge, and self-assessed treatment outcome among general dental practitioners in Sweden and Norway. Acta Odontol Scand. 2020;78(7):547-52. https://doi.org/10.1080/00016357.2020.1763455
PMid:32401091
20. Tsotsis P, Dunlap C, Scott R, Arias A, Peters OA. A survey of current trends in root canal treatment: access cavity design and cleaning and shaping practices. Aust Endod J. 2021;47(1):27-33. https://doi.org/10.1111/aej.12449
PMid:33030288
21. Eliyas S, Briggs PFA, Gallagher JE. Assessing a training programme for primary care dental practitioners in endodontics of moderate complexity: Pilot data on skills enhancement and treatment outcomes. Br Dent J. 2018;225(7):617-28. https://doi.org/10.1038/sj.bdj.2018.807
PMid:30310203
22. Palmer NO, Ahmed M, Grieveson B. An investigation of current endodontic practice and training needs in primary care in the north west of England. Br Dent J. 2009;206(11):E22. https://doi.org/10.1038/sj.bdj.2009.473
PMid:19478812
23. Yamaguchi M, Noiri Y, Itoh Y, Komichi S, Yagi K, UemuraR, *et al*. Factors that cause endodontic failures in general practices in Japan. BMC Oral Health. 2018;18(1):70. https://doi.org/10.1186/s12903-018-0530-6
PMid:29703201
24. Dahlström L, Molander A, Reit C. The impact of a continuing education programme on the adoption of nickel-titanium rotary instrumentation and root-filling quality amongst a group of Swedish general dental practitioners. Eur J Dent Educ. 2015;19(1):23-30. https://doi.org/10.1111/eje.12097
PMid:24646133
25. Carlson E, Nygren F, Wennick A. Critical friends: Health professionals' experiences of collegial feedback in a clinical setting. J Contin Educ Health Prof. 2018;38(3):179-83. https://doi.org/10.1097/CEH.0000000000000210
PMid:29944482
26. Šutej I, Lepur D, Božić D, Pernarić K. Medication prescribing practices in croatian dental offices and their contribution to national consumption. Int Dent J. 2021;71(6):484-90. https://doi.org/10.1016/j.identj.2021.01.004
PMid:33648770
27. Šutej I, Lepur D, Bašić K, Šimunović L, Peroš K. Changes in medication prescribing due to COVID-19 in dental practice in croatia-national study. Antibiotics (Basel). 2023;12(1):111. https://doi.org/10.3390/antibiotics12010111
PMid:36671312
28. Perić M, Perković I, Romić M, Simeon P, Matijević J, Prpić Mehičić G, *et al*. The pattern of antibiotic prescribing by dental practitioners in Zagreb, Croatia. Cent Eur J Public Health. 2015;23(2):107-13. doi: 10.21101/cejph.a3981
PMid:26851419
29. Sović J, Šegović S, Tomasić I, Pavelić B, Šutej I, Anić I. Antibiotic administration along with endodontic therapy in the republic of croatia: A pilot study. Acta Stomatol Croat. 2020;54(3):314-21. https://doi.org/10.15644/asc54/3/9
PMid:33132394
30. Šimundić Munitić M, Šutej I, Ćaćić N, Tadin A, Balić M, Bago I, *et al*. Knowledge and attitudes of croatian dentists regarding antibiotic prescription in endodontics: A cross-sectional questionnaire-based study. Acta Stomatol Croat. 2021;55(4):346-58. https://doi.org/10.15644/asc55/4/2
PMid:35001930

31. Coric A, Grgic S, Kostic S, Vukojevic K, Zovko R, Radica N, *et al*. Attitudes of dental practitioners towards antimicrobial therapy in Croatia and Bosnia and Herzegovina. Eur J Dent Educ. 2020;24(1):88-94. https://doi.org/10.1111/eje.12471
PMid:31574199
32. Sović J, Šegović S, Pavelić B, Bago I, Šutej I, Tomašić I. Patterns of antibiotic prescription in endodontic therapy in the republic of croatia. Antibiotics (Basel). 2024;13(7):10.3390/antibiotics13070645. https://doi.org/10.3390/antibiotics13070645
PMid:39061327
33. Babić B, Barun J, Jukić Krmek S, Kotarac Knežević A, SalarićI, Ivanišević Malčić A. Clinical and radiographic assessment of cases referred to endodontic surgery. Acta Stomatol Croat. 2019;53(2):132-40. https://doi.org/10.15644/asc53/2/5
PMid:31341321
34. Firić M. Self-assesment of the Preparedness of the Dentists for Treating Medical Emergencies in the Dental Medicine Practices [In Croatian] [Internet]. Zagreb; 2022. Available from: https://urn.nsk.hr/urn:nbn:hr:127:173822. [Last accessed on 2024 Sep 30].
35. Nikolic H, Ivancic Jokic N, Bakarcic D, Hrvatin S, Jakljevic N. Knowledge about emergency procedure in case of dental trauma among paediatricians in Croatia. Eur J Paediatr Dent. 2018;19(4):277-81. https://doi.org/10.23804/ejpd.2018.19.04.5
PMid:30567443
36. Savić Pavičin I, Lovrić Ž, Zymber Çeshko A, Vodanović M. Occupational Injuries among Dentists in Croatia. Acta Stomatol Croat. 2020;54(1):51-9. http://doi.org/10.15644/asc54/1/6
PMid:32523157
37. Pedic I, Cigic L, Kalibovic Govorko D, Vodanovic K, Bandic R, Glavinic R, *et al*. Knowledge of dental students from croatia, slovenia, and bosnia and herzegovina about dental care of oncology patients. Dent J (Basel). 2021;9(11):132. https://doi.org/10.3390/dj9110132
PMid:34821596
38. Sovic J, Segovic S, Matijevic J, Pavelic B, Anic I, Tomasic I. Current trends in Endodontic Clinical Practice in Croatia: A Report from a Croatian National Survey; 2024. Under Review.
39. Savić Pavičin I, Jonjić A, Maretić I, Dumančić J, Zymber Çeshko A. Maintenance of dental records and forensic odontology awareness: A survey of croatian dentists with implications for dental education. Dent J (Basel). 2021;9:37. https://doi.org/10.3390/dj9040037
PMID:33806022
40. Savani GM, Sabbah W, Sedgley CM, Whitten B. Current trends in endodontic treatment by general dental practitioners: Report of a United States national survey. J Endod. 2014;40(5):618-24. https: doi.org/10.1016/j.joen.2014.01.029
PMid:24767553
41. Galibourg A, Peters OA, Diemer F, Nasr K, Maret D. Continuing endodontic education and COVID-19: Before, during and after? Int Endod J. 2020;53(11):1598-9. https://doi.org/10.1111/iej.13368
PMid:32779736
42. Liu X, Zhou J, Chen L, Yang Y, Tan J. Impact of COVID-19 epidemic on live online dental continuing education. Eur J Dent Educ. 2020;24(4):786-9. https://doi.org/10.1111/eje.12569
PMid:32648989
43. Buck D, Newton T. Continuing professional development amongst dental practitioners in the United Kingdom: How far are we from lifelong learning targets? Eur J Dent Educ. 2002;6(1):36-9. https://doi.org/10.1046/j.1396-5883.2001.00248.x
PMid:11872072