

Receptivity and Feedback to the Online Endodontics Congress Concept as a Learning Option - An International Survey

 Joao MEIRINHOS,  Mariana Domingos PIRES,  Rui PEREIRA da COSTA,  Jorge N.R. MARTINS

ABSTRACT

Objective: The traditional face-to-face or on-site lecturing methods are still among the most common forms of delivering knowledge to students in dental education. However, other innovative learning methodologies have the potential to complement, or even improve, the effectiveness and quality of teaching. The aim of this online survey was to analyze the receptivity of endodontics practitioners to a specific online teaching format of a multi-day congress, mimicking an on-site conference, and perceive whether the participants regarded it as an effective way of acquiring knowledge with application in their clinical practice activity.

Methods: An online questionnaire, composed of 17 items, was sent during the last day of a multi-day online congress. Four strands of information were taken into account: demographics; previous online formation experience; personal involvement in the underway online congress; and overview of the online congress concept. Participation was voluntary and anonymous. Total counts, frequencies and descriptive statistics were generated by using SurveyMonkey software.

Results: A total of 1.827 answers were delivered, which represented a return rate of 15.8%. The results indicated that most of the participants agree that online learning could be a good alternative to the traditional on-site learning methodology in improving their practical abilities. In addition, the present survey found that the majority of the attendees support the use of computers as an assisting tool and only 18.0% reported difficulties when using technologies. A high number of practitioners recognized a favourable cost-benefit ratio of using online lessons and stated they would recommend others to participate in online meetings as well.

Conclusion: Overall, the present results suggest that online learning may be used successfully to improve student's knowledge and enhance their abilities to apply acquired content in clinical situations. Moreover, the participants felt online learning to be effective, engaging and with a favourable cost-benefit ratio.

Keywords: Congresses, dental technology, dental education, distance learning, dental health survey, knowledge computer acquisition, online system

HIGHLIGHTS

- Online learning may be a useful and reliable option to complement the clinician knowledge.
- According to the present international survey, the participants on an online endodontic multi-day congress, felt engaged and motivated.
- Moreover, not only the computers were not seen as an obstacle, but also the acquired knowledge was perceived as useful and with practical application.
- The more favourable cost-benefit ratio was reported to be a major advantage of the online participation.

INTRODUCTION

Education is traditionally based, and supported, in classes taught in pedagogical programs and schools in which the physical presence of the student in the learning facilities is mandatory. Nowadays, students, of all ages and experience levels, have much more learning options. One of those options is the online learning, taking advantage of the worldwide spread of high speed internet connections. Several advantages of online learning may help to explain why this option might be of

major importance in today's and future educational programs (1). Flexibility regarding learning schedule and place (1, 2), lower academic intensity with superior information retention (1, 2), superior student engagement (2, 3), superior self-discipline and responsibility requirements (2) and lower financial costs (2, 4) are a few of the online learning format benefits that may help students balance work and family commitments.

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From the Department of Endodontics (J.M. ✉ jmeirinhos17@gmail.com, M.P., R.P.C., J.M.) Faculty of Dental Medicine, University of Lisbon, Lisbon, Portugal

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Social societies change over time, and both students and workers need to adapt to those changes. A report by Kearney et al. (2) suggested that this new educational methodologies are fine examples of changes in response to students' needs. This suggestion is in accordance with previous studies (1, 3, 4). New technologies have built a networking culture, and the adherence to this new way of communicating and sharing information has allegedly kept the online enrolled students motivated (2), satisfied and recognizing it as an effective learning format (5). Moreover, reports also noticed an improvement in students' grades and motivation when using the online learning option (3, 6).

The superiority and advantages of online learning are not consensual among faculties and researchers. Some support it as being one of the best learning tools nowadays, while others believe it might not be the best available option pointing out several limitations and disadvantages. Some argue that online courses are non-interactive and can be especially ineffective with shy or more reticent students that, given the opportunity to participate in chats and discussion forums, will fail to engage in such exchange (7, 8). Zheng et al. (3) suggested that one major challenge of online learning is the maintenance of the social dimension on the online environment. Moreover, online studying can be a serious obstacle to many potential students in part because of possible technical difficulties or lack of computer knowledge (5). Nevertheless, online formation was also found to be more effective than face-to-face classroom lectures according to a meta-analysis conducted by the U.S. Department of Education (1).

Endodontic clinical practice, although based on scientific theoretical concepts, is a full time practical activity. Because of that, it may be seen as an area whose professionals might demand a more face-to face and hands-on type of learning, when compared to other non-medical professions with less practical activity. The impact of online learning methods in Endodontics, as a complement of the face-to face and hands-on type of formation, and the way clinicians perceive it, are not yet fully clarified in the available literature. Although several previous studies (1, 3, 5,) have performed assessments on the acceptance of online format lectures, there is no information in the available literature regarding endodontics practitioners, or any other dentistry practitioner, receptivity to a multi-day online congress with several lectures a day, mimicking the conventional on-site learning multi-day congresses.

Therefore, the aim of this study was to assess, through an online survey conducted during an online congress, the receptivity of endodontics practitioners to that particular online format of a multi-day intensive formation, and perceive whether the online learning was effective for their clinical practice activity.

MATERIALS AND METHODS

An international observational and descriptive survey was conducted having as target a population mainly focused on Endodontics practice. A total of 11.599 international attendees from 119 countries of an online congress (International Endo-Masters 2016), conducted between the 23rd and 28th of May,

were invited to participate by answering to a 17 items survey (Fig. 1) delivered by SurveyMonkey. Although the registration on the above mentioned online congress was not dependent of the survey participation, the registration on it was associated to the submission of the survey. However, the participation was voluntary, anonymous and free of any form of financial compensation. The questionnaire was sent one single time at the last day of the one week online formation, which comprised 40 one-hour online lectures for 6 consecutive days (Monday to Saturday), averaging 6.7 lectures a day with one hour in between lectures, whose sessions started at 9am and finished at 10pm (Greenwich time). The answers were received during the following 2 weeks, and the responses received after that date were not considered. In order to understand the expectation, motivations and accomplishments of the participants regarding the online formation, the 17 items (written in English and composed of 6 questions to be answered and 11 statements to be confirmed through a concordance scale) to be assessed on the survey were defined by consensus by three authors (JMe, MP, JMa) and tried to encompass the four following topics: demographics (Q1-Q2); previous online formation experience (Q3-Q6); personal involvement/participation in the underway online congress; (Q7-Q13); overview of the online congress concept (Q14-Q17). Among the 11.599 surveyed individuals, 1.827 answered to the questionnaire, representing a return rate of 15.8%.

Total counts, frequencies and descriptive statistics were generated, using SurveyMonkey software, to each item and the data presented through pie charts built using Excel (Microsoft, Redmond, USA) tables. This study was approved by the ethics commission of Faculdade de Medicina Dentária da Universidade de Lisboa.

RESULTS

From the 1.827 participants in the survey, 1.520 (83.2%) answered to all items, while only 307 (16.8%) skipped one or more questions. Among those that answered to the demographic questions, 51.0% were males and 49.0% were females, while the most prevalent age intervals were [20-30] and [31-40], representing a combined proportion of 77.6% of the answers ([20-30] 41.8%; [31-40] 35.9%; [41-50] 16.4%; [51-60] 5.2%; [61+] 0.7%).

Regarding the previous experience on online formation, 89.7% supports the use of the computer as an assisting tool, while only 1.4% disapproves of it (Q3), and 95.3% of the survey participants believe online lectures contribute to their knowledge acquisition (Q4). 44.9% of the individuals had never performed online congress learning before (Q5) and one major motivation was to be able to participate in an event free of charge (Q6). The results of the past experience are summarized in Figure 2.

As for the experience on participation on an online event, the majority of the participants refer that the online lecture format gave them the theoretical content and practical skills insights in 87.6% and 82.5% of cases, respectively (Q8 and Q9). 62.4% of the participants took part in 1 to 10 lectures of the current one week congress format, while 8.3% were able to attend

<p>Q1 What is your gender?</p> <ol style="list-style-type: none"> 1. Female 2. Male 	<p>Q10 The lecture provided enough information on each subject.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
<p>Q2 What is your age group?</p> <ol style="list-style-type: none"> 1. 20-30 2. 31-40 3. 41-50 4. 51-60 5. 61+ 	<p>Q11 I was more engaged in this congress.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
<p>Q3 I enjoy using computers as a teaching assisting tool.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree 	<p>Q12 I was more likely to ask questions throughout the lecture.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
<p>Q4 I believe using online lessons is useful for learning.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree 	<p>Q13 I had trouble using the technologies in this online congress.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
<p>Q5 Have you taken part in an online congress before?</p> <ol style="list-style-type: none"> 1. Never 2. Once 3. More than once 	<p>Q14 This online congress had a favorable cost-benefit ratio of effort and learning outcomes.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
<p>Q6 Which of the following best described your primary motivation for taking part in an online congress?</p> <ol style="list-style-type: none"> 1. I have work or family commitments that would not allow me to attend an on-sight congress. 2. I live too far away to attend an on-sight congress. 3. I can attend the online congress free of charge 	<p>Q15 If the same congress was being offered in different formats, which course format would you prefer?</p> <ol style="list-style-type: none"> 1. Entirely face-to-face congress format 2. Blended congress format 3. Entirely online congress format
<p>Q7 How many lectures of the online congress did you attend?</p> <ol style="list-style-type: none"> 1. 0 2. 1 to 5 3. 5 to 10 4. 10 to 15 5. 15 to 20 6. More than 20 	<p>Q16 I would recommend the online congress to other people.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
<p>Q8 The online lecture format enabled me to learn the content I needed.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree 	<p>Q17 Given the opportunity I would take part in another online congress in the future.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree
<p>Q9 The online lecture format enabled me to acquire skills on how to apply the knowledge in my practice.</p> <ol style="list-style-type: none"> 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree 	

Figure 1. Sample questionnaire

more than 20 lectures (Q7). 75.1% of the attendees felt more engaged on this online format (Q11), while 50.4% felt more comfortable to intervene and ask questions throughout the

lecture in this particular congress format (Q12). Only 18.0% reported difficulties using technologies (Q13). The overall results for an online congress experience are presented in Figure 3.

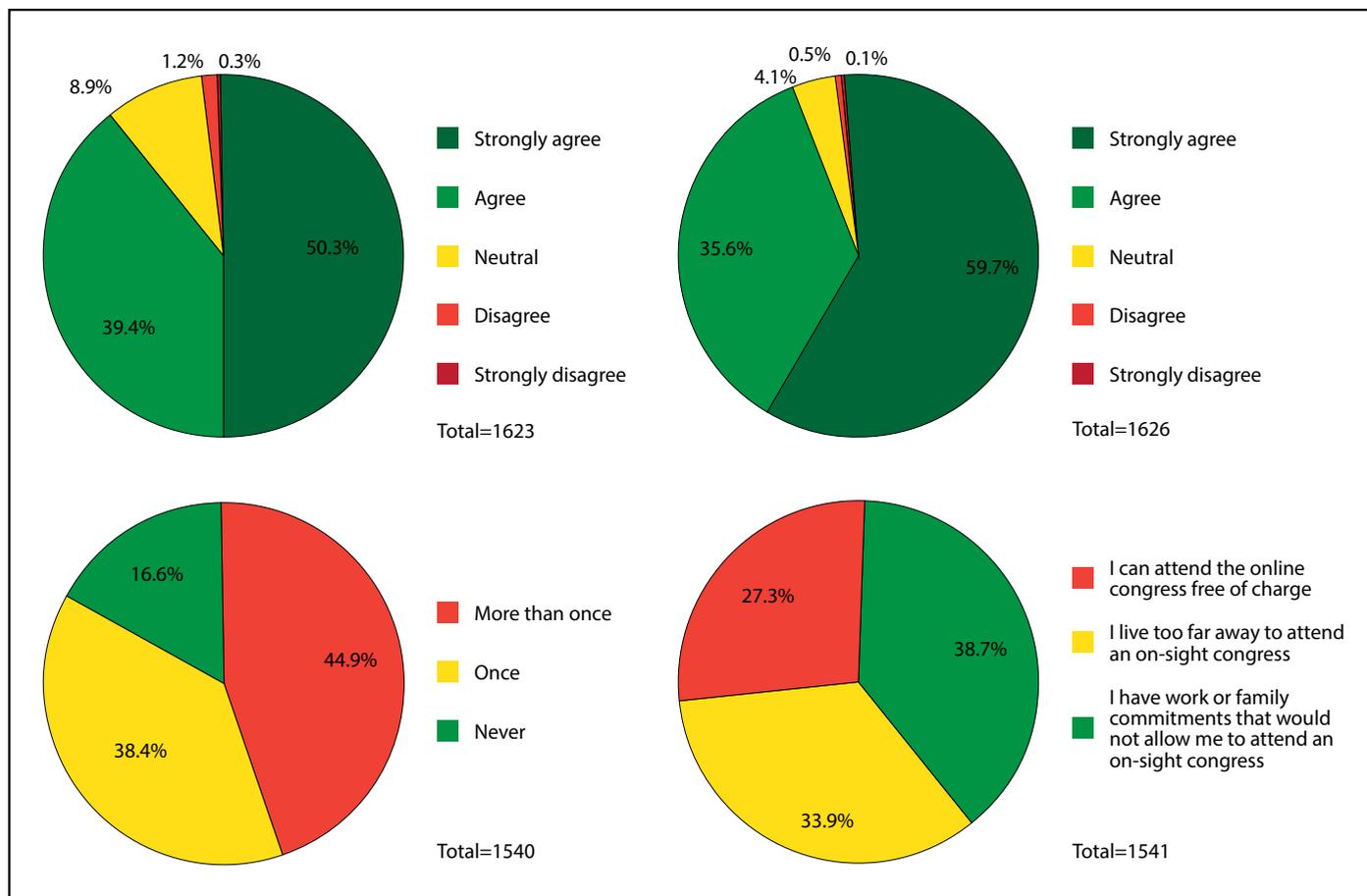


Figure 2. Previous online experience

Regarding the overall overview of this specific type of education, 84.9% recognized a favourable cost-benefit ratio of using online lessons (Q14) and only 13.3% mentioned they would prefer the same congress entirely on a face-to-face format (Q15). More than 95.0% of the attendees would recommend or are willing to participate in other online congresses (Q16 and Q17). The overview of the online congress concept results are shown in Figure 4.

DISCUSSION

New technologies have expanded the available learning tools for students. Nowadays, internet, networking and social media have a major impact on dental education, contributing to the improvement of the inter communication between students and teachers and promoting new challenges through online lectures and congresses (9). To our knowledge, this is the first international survey addressing the receptivity to a multi-day online congress with several lectures a day, which basically mimics the traditional on-site multi-day meetings. Traditionally the on-site congress have two or three days, plus one of pre-congress courses, which make them a three to four days meetings, in this case the multi-day on-line meeting had a format of six days, which can be considered as an organization commission decision mainly to compensate the use of a single on-line broadcast room. The attendance control and participation entrance to the broadcast room was made upon e-mail identification and confirmation. The response rate of the present survey

was 15.8%, and after starting it 83.2% of the participants finished all queries, representing a high level of engagement to the survey.

The results of this online survey highlighted a high percentage of computer users in learning activities (89.7%) which can have a positive effect both on student learning and clinical performance (10). Moreover, nowadays several technological options are available for both teachers and students in order to improve and facilitate their communication and sharing of information and knowledge. This situation has significantly changed the dental education. New generations of students are growing up with electronic textbooks (11) and digital libraries (12). Moreover, platforms such as Twitter (13) and other social media (9) are being used as online clinical cases sharing platforms (14) and, ultimately, for teaching and learning.

In the present study, 95.3% of the participants believe that online lectures contribute to the acquisition of knowledge and skills, which according to Chodorow (15), might be related to full control and accessibility to the contents through access on the learning website. Moreover, recent studies have demonstrated that a majority of dentists complete and complement their continuing education hours online (16, 17).

Previous studies (1, 2) have also documented an increase of student engagement with the use of new technologies and online lectures in dental education, and the present study

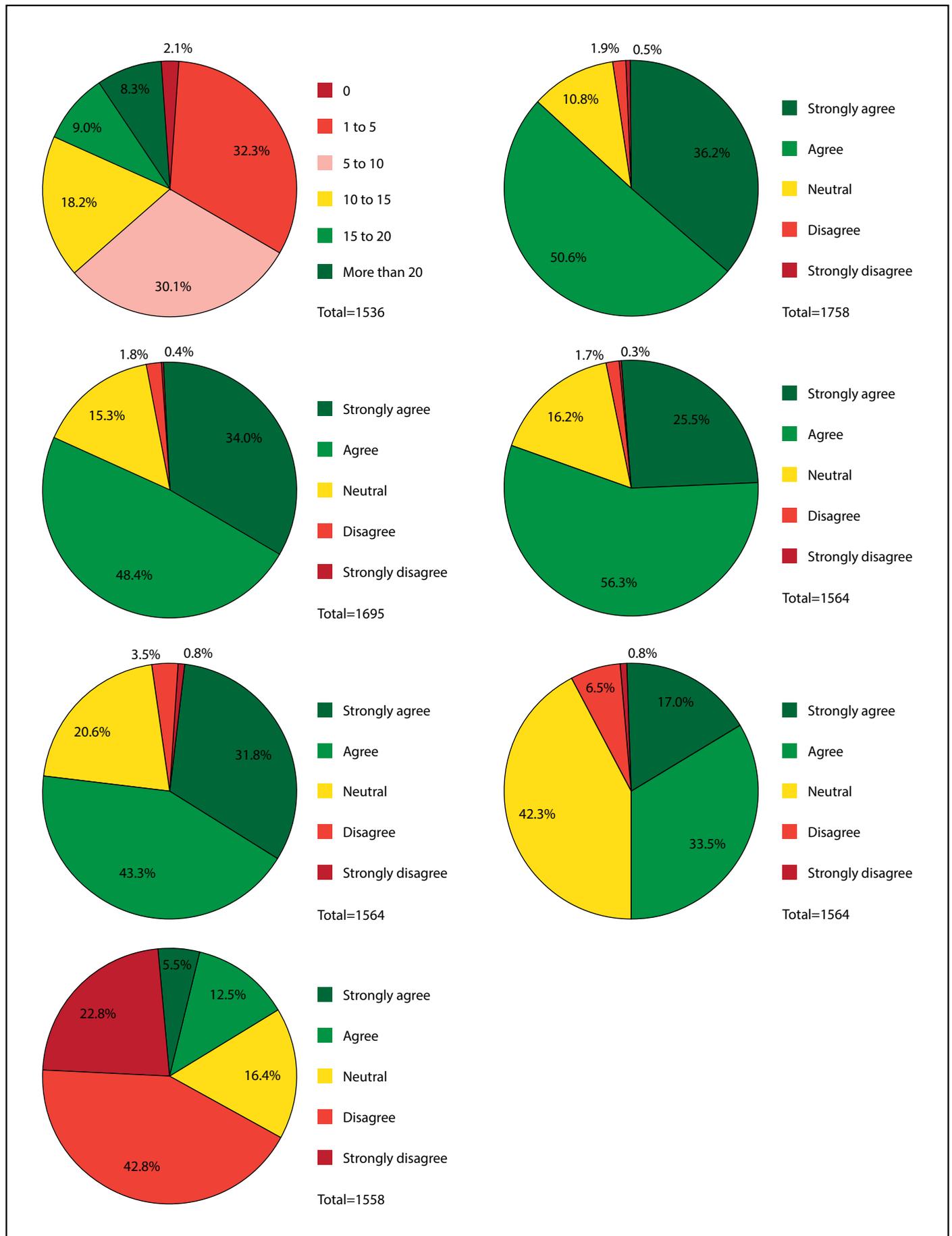


Figure 3. Personal involvement in the on-line congress

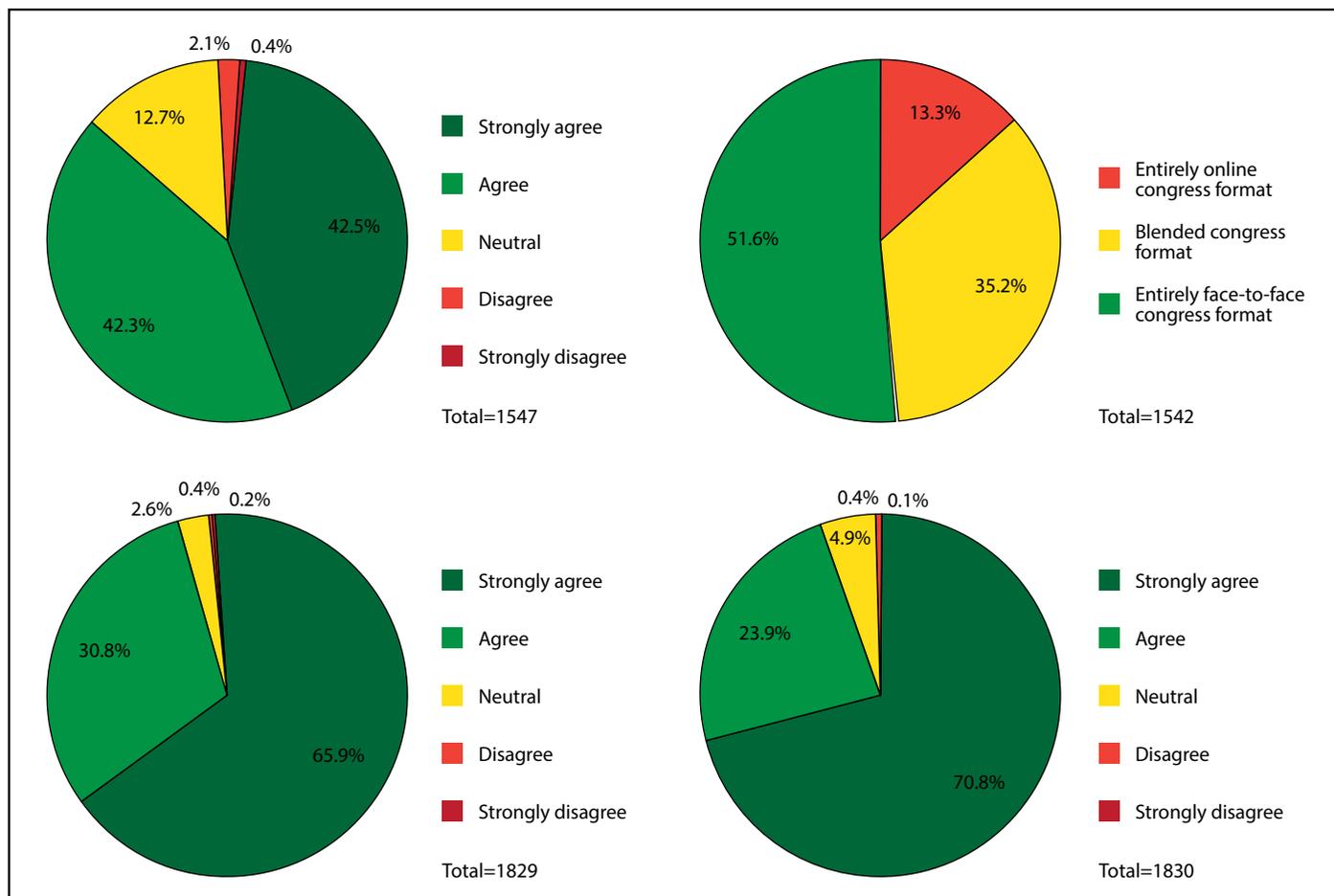


Figure 4. Online congress overview

supports those findings. 75.0% of the inquired felt engaged to the event, which means, according to Zheng et al. (3), that online learning format is effective and the speaker speech is capable of being attractive and motivating (3). The importance of the speaker's capacity to capture attention has also been described by Koole et al. (18). Additionally, Gonzalez et al. (13) reported that students participating in online lectures display higher communication efforts, through questions and comments in online platforms, which is in line with the present study results (13). According to the present survey responses, the main motivation to participate in online lectures is the economic factor. An online congress free of charge for people who live far away from venues of on-site events can explain the high number of registrations (2). Also, the possibility to pause and write notes throughout the lectures to avoid missing any part and re-watch parts of the videos according to their personal interests, schedules and at their own pace are other important reasons to join in this type of online events, according to Maresca et al. (1).

The present survey has revealed also that the majority of attendees of this type of online learning format felt that their theoretical knowledge and practical skills got improved. Moreover, several studies (19, 20, 21) suggest that learning videos may help students to develop abilities which help them to apply their content to new clinical situations. A meta-analysis conducted by the U.S. Department of Education (22), in 2010, supports the hypothesis that online learning can be

used to significantly increase the clinical performance when compared to traditional face-to-face classroom lectures, helping participants to prepare and understand all of the operative steps of the procedures.

Although for 44.9% of the participants this was the first online learning experience, all who participate in the online lectures felt a more positive impact on their learning and clearly recognized a favourable cost-benefit ratio, while stating that they would prefer the same current online format instead of an entirely face-to-face congress if given the choice. These results corroborate Cook et al. (22) and Schonwetter et al. (6) studies. This preference is similar to that found among students in the Maresca et al. (1) study, where 85.0% demonstrated satisfaction with online learning. The study participants remarked the high quality of the lectures, videos, organization of the course and educational content. The quality of online material and positive student evaluations are important factors in determining the success of online learning courses in dental education. The present results clearly indicate that most of the participants are aware of the backstage work and effort put on by the online learning organization, since a large part of them would recommend or are willing to participate in another online congress, revealing a great satisfaction with this learning method.

Some limitations should be noted regarding the present survey. The student sample was obtained by convenience, so it

may not be truly representative of international preferences for online congresses and may not be generalized to all dentists. However, it is important to note that with 1.827 participants, the present survey is one of the largest ever conducted in Endodontics. Like any other survey, one other limitation of the study format is the fact that the questionnaire consisted of closed questions only, which restricted the participants in expressing their opinions. Moreover, the assessment focused only in one single type of online learning format. Despite these limitations, this study is the first report available focused on endodontics practitioners, or any other dentistry practitioner, receptivity to a multi-day online congress with several lectures a day, mimicking the traditional on-site meetings. Future research should further explore the use and impact of other online learning formats and tools on dental education in general, and Endodontics in particular.

CONCLUSION

The present survey revealed that computers were not an obstacle to complement education in Endodontics, and most of the participants accepted to rely on online lectures to complement their knowledge. The majority of the participants felt motivated on this online format. Moreover, the majority of the attendees recommended the participation in online learning and recognize it as having a positive effect not only in their theoretical knowledge but also in their clinical competences. The participants also felt that online learning was effective and with a very favourable cost-benefit ratio.

Disclosures

Conflict of interest: The authors deny any conflicts of interest.

Ethics Committee Approval: The present study has been approved by the Comissão de Ética para a Saúde from Faculdade de Medicina Dentária da Universidade de Lisboa.

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REFERENCES

- Maresca C, Barrero C, Duggan D, Platin E, Rivera E, Hannum W, et al. Utilization of blended learning to teach preclinical endodontics. *J Dent Educ* 2014; 78(8):1194–204.
- Kearney RC, Premaraj S, Smith BM, Olson GW, Williamson AE, Romanos G. Massive Open Online Courses in Dental Education: Two Viewpoints: Viewpoint 1: Massive Open Online Courses Offer Transformative Technology for Dental Education and Viewpoint 2: Massive Open Online Courses Are Not Ready for Primetime. *J Dent Educ* 2016; 80(2):121–7.
- Zheng M, Bender D, Reid L, Milani J. An Interactive Online Approach to Teaching Evidence-Based Dentistry with Web 2.0 Technology. *J Dent Educ* 2017; 81(8):995–1003.
- Faraone KL, Garrett PH, Romberg E. A blended learning approach to teaching pre-clinical complete denture prosthodontics. *Eur J Dent Educ* 2013; 17(1):e22–e27
- Funkhouser E, Agee BS, Gordan VV, et al. Use of online sources of information by dental practitioners: findings from The Dental Practice-Based Research Network. *J Public Health Dent* 2014; 74(1):71–9.
- Schönwetter DJ, Gareau-Wilson N, Cunha RS, Mello I. Assessing the Impact of Voice-Over Screen-Captured Presentations Delivered Online on Dental Students' Learning. *J Dent Educ* 2016; 80(2):141–8.
- Zheng M, Spires H. Teachers' interactions in an online graduate course on Moodle: a social network analysis perspective. *Meridian* 2012; 14(1).
- Dixon MD. Measuring student engagement in the online course: the online student engagement scale (OSE). *Online Learn* 2015; 19(4).
- Spallek H, Turner SP, Donate-Bartfield E, Chambers D, McAndrew M, Zarkowski P, et al. Social Media in the Dental School Environment, Part A: Benefits, Challenges, and Recommendations for Use. *J Dent Educ* 2015; 79(10):1140–152.
- Hendricson WD, Panagakos F, Eisenberg E, McDonald J, Guest G, Jones P, et al. Electronic curriculum implementation at North American dental schools. *J Dent Educ* 2004; 68(10):1041–57.
- Aravena PC, Schulz K, Parra A, Perez-Rojas F, Rosas C, Cartes-Velásquez R. Use of Electronic Versus Print Textbooks by Chilean Dental Students: A National Survey. *J Dent Educ* 2017; 81(3):293–9.
- Spielman AI, Maas E, Eisenberg ES. 12-Year Use of a Digital Reference Library (VitalBook) at a U.S. Dental School: Students' and Alumni Perceptions. *J Dent Educ* 2017; 81(10):1243–51.
- Gonzalez SM, Gadbury-Amyot CC. Using Twitter for Teaching and Learning in an Oral and Maxillofacial Radiology Course. *J Dent Educ* 2016; 80(2):149–155.
- Oliveira ER, Rose WF, Hendricson WD. Online Case-Sharing to Enhance Dental Students' Clinical Education: A Pilot Study. *J Dent Educ* 2019; 83(4):416–22.
- Chodorow S. Educators must take the electronic revolution seriously. *Acad Med* 1996; 71(3):221–6.
- Cohlmi R. The value (and power) of online continuing education. *J Okla Dent Assoc* 2008; 99(12):20–1.
- Manhas R. Use of the Internet and electronic resources for dental science information: a case study. *Library Philosophy and Practice* 2008; 1–8.
- Koole S, Vervaeke S, Cosyn J, De Bruyn H. Exploring the relation between online case-based discussions and learning outcomes in dental education. *J Dent Educ* 2014; 78(11):1552–7.
- Dale E. Audio-visual methods in teaching. Revised edition. New York: The Dryden Press; 1954
- Patel SA, Barros JA, Clark CM, Frey GN, Streckfus CF, Quock RL. Impact of Technique-Specific Operative Videos on First-Year Dental Students' Performance of Restorative Procedures. *J Dent Educ* 2015; 79(9):1101–7.
- Miller CJ, Metz MJ. Can Clinical Scenario Videos Improve Dental Students' Perceptions of the Basic Sciences and Ability to Apply Content Knowledge?. *J Dent Educ* 2015; 79(12):1452–60.
- Evaluation of evidence-based practices in online learning: a meta-analysis and review of online learning studies. Washington, DC: U.S. Department of Education, Office of Planning, Evaluation, and Policy Development; 2010.
- Cook DA, Levinson AJ, Garside S, Dupras DM, Erwin PJ, Montori VM. Internet-based learning in the health professions: a meta-analysis. *JAMA* 2008; 300(10):1181–96.