

How do dental faculty members relate to Evidence-Based Dentistry?

Luana Zanella*; Ricardo Rezer**; Sinval A. Rodrigues-Junior**

* DDS, MSc in Health Sciences from the Community University of Chapecó Region, Unochapecó

** Ph.D., Professor, Graduate Program in Health Sciences, Unochapecó

Received September 16, 2019. Approved January 4, 2020.

ABSTRACT

Building the rationale to critically appraise scientific evidence on the best approach for each patient requires incorporating the Evidence-Based Dentistry (EBD) model, preferably into undergraduate dental courses. This approach would favor the diffusion of EBD culture amongst dental professionals. Therefore, this study aimed to characterize the relationship of dental faculty members with the EBD model. The study was conducted in 2018 with all 23 dental faculty members (100% response rate) of a community university. They responded the Evidence-Based Practice Questionnaire (EBPQ) and a set of supporting questions involving sociodemographics, search for information, proficiency of foreign languages, and perceived need for knowledge on issues related to EBD. The data were analyzed by descriptive statistics. A total of 73.9% of faculty members claimed having been prepared to search for scientific evidence and 69.5% are aware of connected computer systems for research. Scientific journals, the internet, courses, and colleague opinions were the main sources of information. Reading and comprehension of foreign languages was limited to 30%. The practice and attitudes towards EBD by dental faculty members were positive, with the lowest mean value of 4.85. Knowledge and skills related to EBD had lower mean values, which coincided with a relatively high perceived need for knowledge on EBD. Dental faculty members present a positive attitude towards the EBD model, have been trained to search for scientific information and acknowledge the existence of institutional structure for applying and teaching EBD. On the other hand, knowledge and skills associated with EBD may require improvement.

Descriptors: Evidence-Based Dentistry. Continuing Dental Education. Dental Faculty. Dental Students.

1 INTRODUCTION

The Evidence-Based Practice (EBP) model refers to the intersection between the best scientific evidence available, patient preferences, and the clinical experience of the professional in the decision-making process related to health care¹. This model had its philosophical origins in the 1980s in

Canada, associating the medical practice with epidemiological rationale². It aims to ensure optimal health care practice based on high-quality evidence, considering aspects of therapeutic efficacy, diagnostic accuracy, safety, and cost-effectiveness. The Brazilian Ministry of Health adopted this model to conduct administrative decision-making

processes related to health issues³.

The EBP model has only reached the Dentistry field in the mid-1990s⁴. In 2001, the so-called Evidence-Based Dentistry (EBD) model, although not explicitly, was incorporated into the National Curricular Guidelines of undergraduate courses in Dentistry, requiring from former students the ability to assess, systematize, and decide on the best conduct based on the highest-quality scientific evidence available⁵. It involves decisions on “the appropriate use, efficacy and cost-effectiveness of the workforce, medications, equipment, procedures, and practices”⁵. In this sense, the EBD model directly affects expected abilities of dental students pointed out in the National Curricular Guidelines, such as health attention and decision making, with reflections on communication, administration and management and demanding continuing education⁵. Therefore, this model should be diffused throughout the dental curriculum, potentially benefiting dental professionals and patients, since it improves patient health care and satisfaction through improved clinical decision making based on solid scientific evidence⁶.

Hence, the demand for redirecting pedagogical practices in Dentistry to help incorporating the EBD model has required dental faculty members to develop abilities other than those involved in and limited to the clinical context. EBD consists in deciding on the most accurate diagnostic tool and the best treatment alternative or prognostic for each patient, as it requires awareness of the path to reach the best evidence available. Finally, it also demands the critical appraisal of the evidence, which involves understanding epidemiology and biostatistics, along with the clinical knowledge of the problem⁷.

Although most dental faculty members acknowledge the importance of teaching EBD, barriers such as time, knowledge, and resources have been indicated in the process to successfully implement EBD in the dental curriculum⁸. Also,

criticism and resistance to change of the current teaching practice have been recognized as barriers originated by part of the faculty members, along with the claim that it is difficult to convince people about the existence of evidence on a particular topic⁹.

Considering that the critical appraisal of scientific evidence in the decision-making process should be part of the undergraduate dental curriculum and properly explored throughout the dental course, this study aimed to characterize the relationship of dental faculty members with the Evidence-Based Dentistry model.

2 METHODS

This observational, descriptive study was developed at The Communitarian University of the Region of Chapecó/Unochapecó, a community-university located in the city of Chapecó, Santa Catarina, Brazil between December 2017 and February 2018, after approval by the institutional Research Ethics Committee (protocol no. 2.349.946).

Communitarian university in the Brazilian context is a public institution that is not funded/maintained by the State; it does not have an owner either, to be characterized as a private institution. Even so, it is supported by the student monthly payment. The dental course exists in this institution since 2009 and has approximately 300 undergraduate dental students. An interdisciplinary post-graduate program in health sciences with masters and doctorate levels also exist in the institution since 2012. Twenty-three dental faculty members graduated in Dentistry were enrolled in the study (100% response rate) and, after signing the Informed Consent Form, they answered a questionnaire on the application of EBD in dental teaching, composed of two parts.

Part 1 included supporting questions on sociodemographics (sex, age, time since graduation, post-graduate studies, and degree achieved), search

for information in the context of professional practices, and work environment support for this search. Additionally, the questions included information sources mostly used, English and Spanish proficiency level, and perceived need for knowledge on topics related to EBD. The last question is a 7-point Likert scale, in which 7 means 'extreme perceived need' and 1 means 'no perceived need' for knowledge.

Part 2 consisted of the Evidence-Based Practice Questionnaire (EBPQ) developed by Upton and Upton (2006)¹⁰ and validated for Brazilian Portuguese by Rospendowski et al. (2014)¹¹. The EBPQ contains 24 items organized as a 7-point Likert scale, in which 1 is a more negative attitude towards EBD, and 7 is a more positive attitude towards EBD. The final score from the sum of the scores of each item resulted in 168 points. The

higher the score, the more positive the attitude towards EBD. The other approach involved calculating the mean score for each item. The EBPQ is organized in three axes: 1, Practice of Evidence-Based Dentistry; 2, Attitude towards Evidence-Based Dentistry; and 3, Knowledge/skills associated with Evidence-Based Dentistry.

The data were analyzed descriptively, calculating absolute and relative frequencies of answers, mean, median, standard deviation (SD), minimum, and maximum values. Previously planned inferential analyses were not applied to data due to the limited sample size.

3 RESULTS

All 23 faculty members answered the questionnaire. Table 1 presents their sociodemographic characteristics.

Table 1. Sociodemographic characteristics of the dental faculty members

Variable	N (%)
<i>Sex</i>	
Male	13 (56.5%)
Female	10 (43.5%)
<i>Age (Mean = 41.0 ± 8.8 years; min. = 29; max. = 65)</i>	
20-29 years	1 (4.3%)
30-39 years	11 (47.8%)
40-49 years	8 (34.8%)
50-59 years	1 (4.3%)
60-69 years	2 (8.7%)
<i>Time since graduation (Mean = 18.0 ± 6.5 years; min. = 8; max. = 32)</i>	
< 10 years	4 (17.4%)
11-20 years	12 (52.2%)
> 21 years	7 (30.4%)
<i>Post-graduation</i>	
Yes	23 (100.0%)
<i>Post-graduation degree</i>	
Specialization	14 (60.9%)
Residence	3 (13.0%)
Masters	8 (34.8%)
PhD	8 (34.8%)

When asked whether they were trained to search for scientific papers, 73.9% of the dental faculty members answered positively. All the faculty members are aware of the existence of connected computer systems, and 69.5% use it for research. The main sources of information mentioned by the participants were scientific journals (34.8%), the internet/Google (26.1%), courses and colleague opinions (13%), protocols (8.7%), and others (4.3%). Textbooks stood out in

the ‘others’ category.

When asked about their English and Spanish proficiency level, 30.4% and 26.1% claimed good reading and comprehension of English texts, respectively, and 17.4% and 21.7% claimed good reading and comprehension of Spanish texts.

Figure 1 presents the results of Axes 1 and 2 of the EBD, figure 2 shows the results of Axis 3, and figure 3 presents the results of perceived need for knowledge on issues related to EBD.

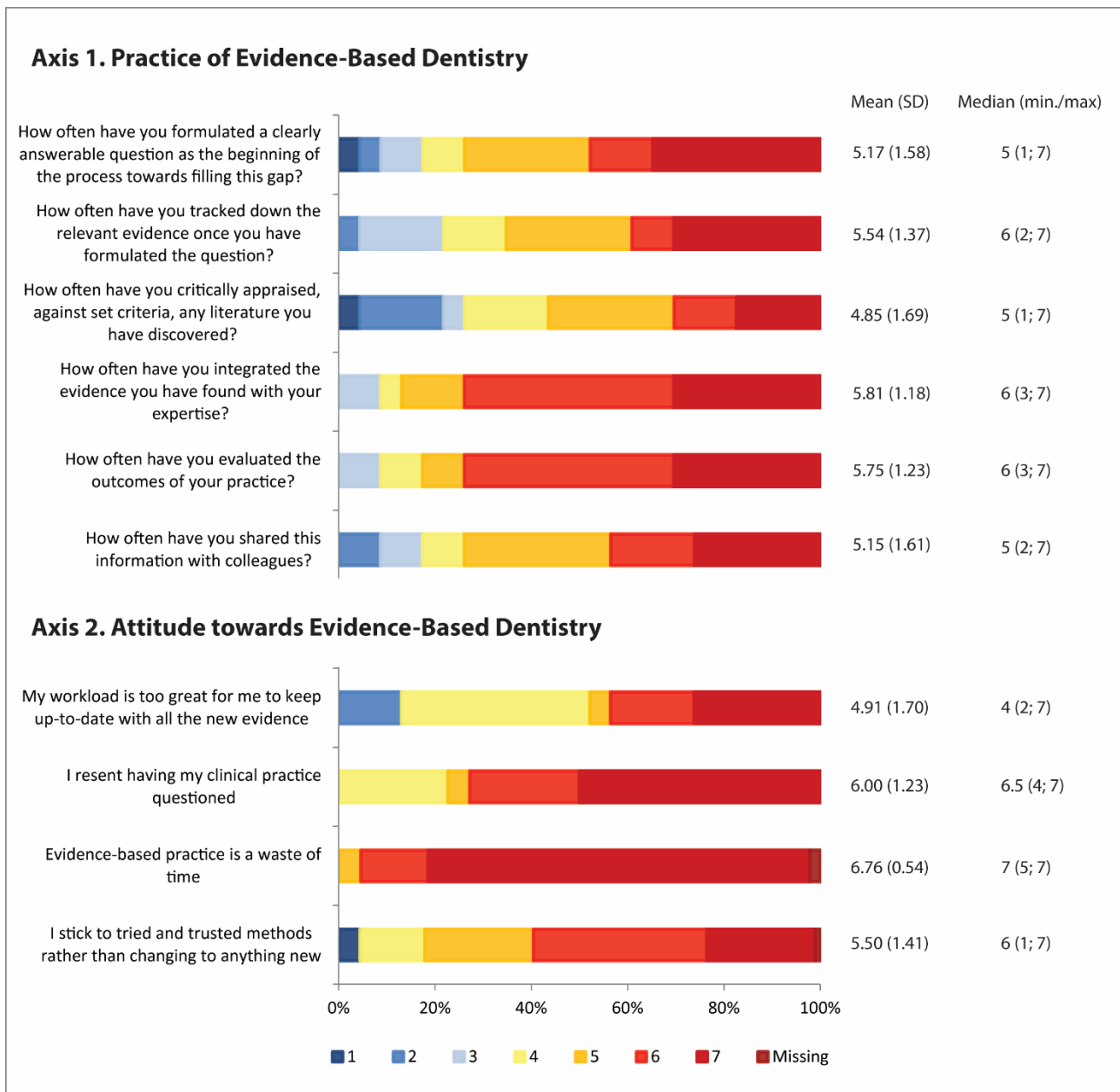


Figure 1. Results of the Axes 1 and 2

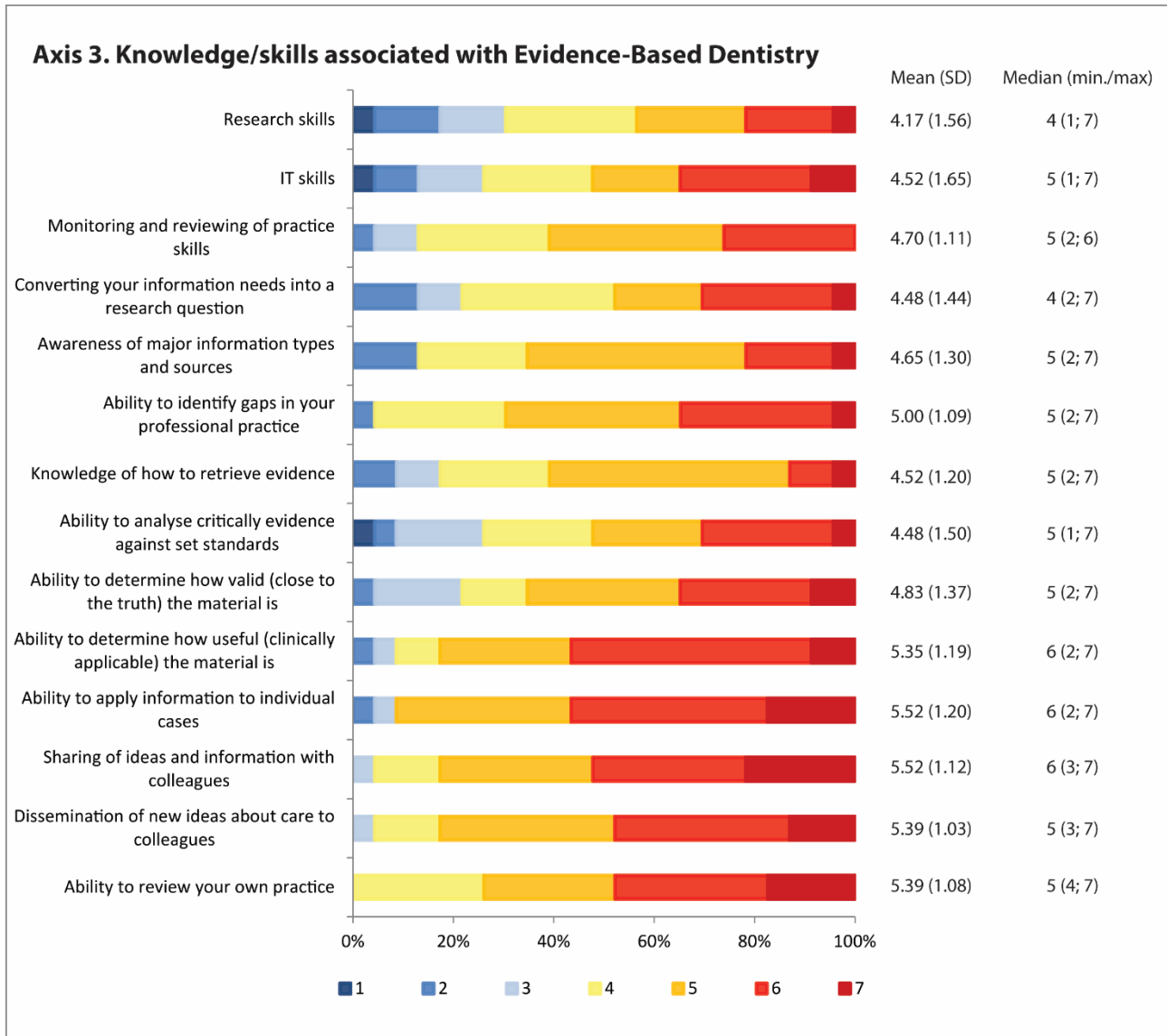


Figure 2. Results of the Axis 3

4 DISCUSSION

This study revealed an overall positive attitude of dental faculty members towards EBD (figures 1 and 2). Most of them claim having been trained to search for scientific papers and acknowledge the existence of structure to do so in the institution. On the other hand, English reading and comprehension was limited to 30%. Additionally, knowledge and skills associated with EBD resulted in slightly lower mean values (figure 2), whereas the perceived need for knowledge on

issues related to EBD was high, with emphasis on systematic review and meta-analysis (figure 3).

Originally designed for nurses, the EBPDQ was validated for Brazilian Portuguese¹¹ and it has been applied to other health professionals, including dentists¹². Although it addresses highly significant EBD issues, the questionnaire is similar to other instruments by relying on the self-perception of professionals on their behavior related to EBD, potentially leading to the overestimation of knowledge and application of the model⁷.

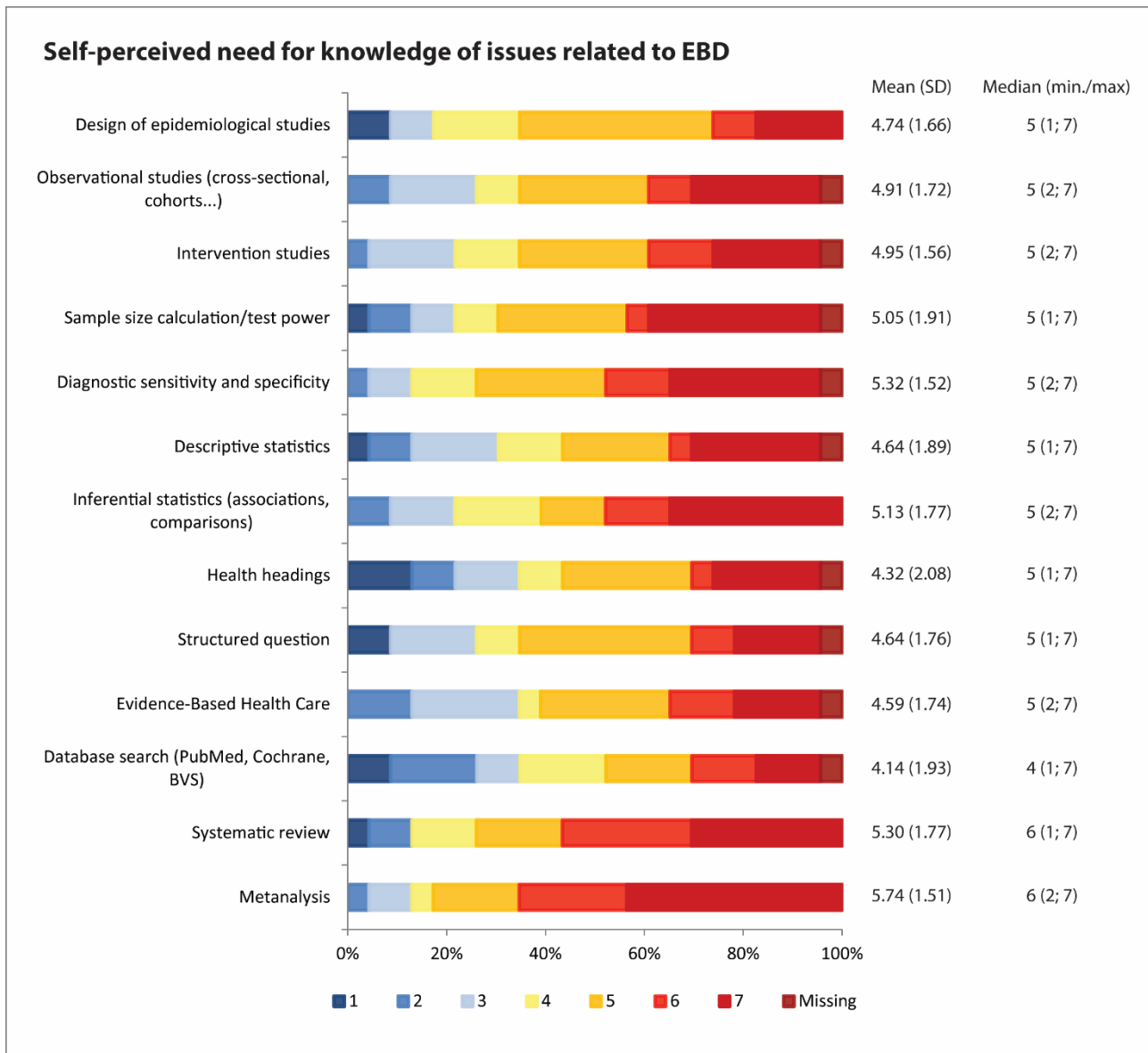


Figure 3. Results of perceived need for knowledge of issues related to EBD

Hence, additional supporting questions were developed to screen the abilities and knowledge on issues related to EBD more objectively.

In addition, demographics revealed a mean value of 18 years since graduation, with approximately 50% of the participants having graduated 11 to 20 years ago. This means that EBD, which is a rather recent approach, may not be well known by all dental faculty members^{7,13}. Moreover,

EBD demands ongoing improvement for consistent and proficient application¹³. In this sense, it is worth noting that even though 100% of the dental faculty members had attended post-graduation, the highest degree achieved by 60% of them was specialization, and dental specialization courses seldom use EBD as the driving paradigm. Literature about how EBD is approached in Brazilian post-graduation courses is scarce. Still, considering the technical and

scientific specificities demanded, one can speculate that this issue is limited to *stricto sensu* post-graduation.

The results of the first axis of the EBPO revealed that most dental faculty members formulate questions, seek for evidence, associate evidence with their expertise, and assess their own practice. They also share information with colleagues and, less often, they critically appraise the evidence found (figure 1). Formulating a structured clinical question is paramount to properly search for the best current evidence available, considering it leads to a specific search strategy involving the elements of the PICO acronym⁴. Professionals associating evidence with the expertise and assessment of their practice present a straightforward ability, which is also required to critically appraise their own practice and communicate decisions based on the best evidence available. The critical appraisal of the evidence found was less frequent than the other parameters, but it was positive in the Likert scale. Critically appraising the methodological quality of the literature available relates to the validity and reliability of the results produced by the studies, and it is essential to obtain applicable results^{14,15}. Therefore, it should be applied every time evidence is searched.

It is worth noting that the use of information from scientific journals, which was limited to 34.8%, does not ensure the search for systematic reviews or studies that top the evidence pyramid. Limited reading and comprehension of studies written in foreign language, especially in English, may hinder the access to quality evidence. Courses and colleague opinions may be rated as 'expert opinion', which is the lowest level of evidence rated in the evidence pyramid. As for textbooks, they are often outdated and lack methodological parameters to develop the information included⁷.

Attitudes related to the second axis were the most positive, varying from 4.91 to 6.76. They expressed a relative time-saving in the work

schedule to search for evidence, often accepting questions about the clinical practice, deeming EBD essential to the professional practice, and changing the practice based on evidence. Embracing EBD is vital to successfully build EBD skills in dental students and the openness for questioning the clinical practice and the role of scientific evidence on the decision-making process would help producing curious and confident students capable of applying EBD proficiently¹³.

Knowledge and skills associated with the third axis varied from 4.17 to 5.39, revealing again, positive perception of knowledge and skills applied to EBD. The lowest values were related to self-perceived research skills, IT skills, conversion of information need into questions, awareness of information sources and types, retrieval of evidence (abilities related to the search for evidence), and critical analysis of evidence. This coincides with the perceived need for knowledge (varying from 4.14 to 5.74) related to epidemiological studies, statistical issues, elements involved in the search for evidence, systematic reviews, and meta-analysis.

The application of the EBD model in the daily patient care requires understanding the study object as well as epidemiological and biostatistics issues. Schneider et al. (2018)¹², having identified limitations of dentists from the Brazilian Family Health Strategy to develop EBD, suggests that the knowledge, practice, and attitudes regarding EBD should be developed during undergraduate studies. Individual limitations have represented barriers to the effective implementation of EBD, including the lack of knowledge on clinical epidemiology and limited skills for searching information^{7,16,17}.

A recent survey with North American dental students revealed that most of them agreed that EBD should be an integral part of the dental curriculum, as it potentially improves the quality of health care¹⁸. On the other hand, it also reports difficulty and lack of confidence in applying the model to the daily practice. Interestingly, the most frequent sources of

information were colleague opinions, the internet, and textbooks, with rare consultations in critically appraised topics from databases such as the Cochrane Database of Systematic Reviews¹⁸.

This reinforces the need for dental faculty members to properly develop the elements involved in EBD with their students. Experiences of implementation of an EBD curriculum throughout a 4-years period have been successfully reported, with dental students and faculty members becoming increasingly aware and supportive of using the EBD model in daily practice^{19,20}. Other study reported improved skills from faculty members to critically appraise evidence and implementation of the model in their practices after a set of workshops based on recommendations of the American Dental Association (ADA)⁹. When it comes to teaching EBD elements, multifaceted educational interventions have been shown to improve the overall competence and confidence of health students towards EBP²¹.

The consistent implementation of EBD requires the involvement of all levels of the clinical practice, namely, patients, dental students, faculty members, and institutions⁷, and so it may face barriers of different natures. Most of these barriers may be difficult to overcome because they involve educational, social, and institutional aspects²². In addition, most undergraduate dental curriculums do not have a formally standardized EBD course⁷. On the other hand, continuing dental education programs planned for dental faculty members to fulfill the requirements of EBD could become a means of initially handling such challenges.

5 CONCLUSION

In conclusion, dental faculty members have a positive attitude towards the EBD model. They report having been trained to search for scientific information and acknowledge the existence of institutional structure for applying and teaching EBD. Conversely, knowledge and skills

associated with EBD may require improvement to put the model into practice adequately. Abiding by the National Curricular Guidelines of undergraduate courses in Dentistry and properly incorporating EBD into the dental curriculum, contributing to a higher quality dental care, requires a group effort involving institutions, dental faculty members, and dental students. The continuing education on EBD seems to be an alternative to help qualifying dental faculty members on issues related to EBD.

RESUMO

Como os docentes de um Curso de Odontologia se relacionam com a Odontologia Baseada em Evidências?

A construção do raciocínio para avaliar criticamente a evidência científica sobre a melhor abordagem para cada paciente requer a incorporação do modelo de Odontologia Baseada em Evidências (OBE), preferencialmente ainda no ensino de graduação. Essa abordagem favorece a difusão da cultura da OBE entre os profissionais de Odontologia. Assim, este estudo teve como objetivo caracterizar a relação de docentes de um curso de Odontologia com o modelo OBE. O estudo foi conduzido em 2018 com todos os 23 professores de uma universidade comunitária. Eles responderam o Evidence-Based Practice Questionnaire (EBPQ) e algumas perguntas complementares envolvendo fatores sociodemográficos, busca por informação, proficiência em idioma estrangeiro e necessidade percebida de conhecimento sobre aspectos relacionados à OBE. Os dados foram analisados descritivamente. Aproximadamente 74% dos professores afirmaram ter sido preparados para pesquisar por evidência científica e 69,5% reconheceram a existência de computador conectado para essa finalidade. Periódicos, internet, cursos e opinião de colegas foram as principais fontes de informação. Leitura e compreensão de idiomas estrangeiros foram limitadas a 30%. A prática e as atitudes voltadas à OBE pelos professores foram positivas, com um valor mínimo de 4,85. O conhecimento e as

habilidades relacionadas à OBE tiveram valores mais baixos, que coincidiram com alta necessidade percebida de informação sobre OBE. Os professores apresentaram uma atitude positiva com relação ao modelo da OBE, foram treinados para buscar informação científica e reconhecem a estrutura institucional para fazê-lo e ensiná-lo. Por outro lado, o conhecimento e as habilidades relacionadas à OBE requerem melhorias.

Descritores: Odontologia Baseada em Evidências. Educação Continuada em Odontologia. Docentes de Odontologia. Estudantes de Odontologia.

REFERENCES

1. Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ*. 1996;312(7023):71-2.
2. Sutherland SE. The building blocks of evidence-based dentistry. *J Can Dent Assoc*. 2000;66(5):241-4.
3. Brasil. Ministério da Saúde. Política Nacional de Gestão de Tecnologias em Saúde. 2011. 48 p.
4. Brignardello-Petersen R, Carrasco-Labra A, Booth HA, Glick M, Guyatt GH, Azarpazhooh A, et al. A practical approach to evidence-based dentistry: how to search for evidence to inform clinical decisions. *J Am Dent Assoc*. 2014;145(12):1262-7.
5. Conselho Nacional de Educação. Resolução CNE/CES 3. 2002.
6. Gillette J, Matthews JD, Frantsve-Hawley J, Weyant RJ. The benefits of Evidence-Based Dentistry for the private dental office. *Dent Clin North Am*. 2009;53(1):33-45.
7. Sabounchi SS, Nouri M, Erfani N, Houshmand B, Khoshnevisan MH. Knowledge and attitude of dental faculty members towards evidence-based dentistry in Iran. *Eur J Dent Educ*. 2013;17(3):127-37.
8. Marshall TA, Straub-Morarend CL, Qian F, Finkelstein MW. Perceptions and practices of dental school faculty regarding evidence-based dentistry. *J Dent Educ*. 2013;77(2):146-51.
9. Moreira N, Leonardi-Dutra K, Feres M, Colangelo E, Balevi B, Matthews D, et al. Impact of Evidence-Based Dentistry Workshops on educators' use of evidence in teaching and practice: a pilot study. *J Dent Educ*. 2018;82(6):581-90.
10. Upton D, Upton P. Methodological issues in nursing research: Development of an evidence-based practice questionnaire for nurses. *J Adv Nurs*. 2006;54(4):454-8.
11. Rospendowski K, Alexandre NMC, Cornélio ME. Adaptação cultural para o Brasil e desempenho psicométrico do "Evidence- Based Practice Questionnaire". *Acta Paul Enferm*. 2014;27(5):405-11.
12. Schneider LR, Rodrigues Junior SA, Zanella L, Ferraz L. Prática Baseada em Evidência na Estratégia Saúde da Família: atitudes e habilidades dos cirurgiões-dentistas. *Rev Eletrônica Acervo Saúde*. 2018;10(6):2301-11.
13. Ciancio MJ, Lee MM, Krumdick ND, Lencioni C, Kanjirath PP. Self-Perceived Knowledge, Skills, Attitudes, and Use of Evidence-Based Dentistry Among Practitioners Transitioning to Dental Educators. *J Dent Educ*. 2017;81(3):271-7.
14. Brignardello-Petersen R, Carrasco-Labra A, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: III How to appraise and use an article about therapy. *J Am Dent Assoc*. 2015;146(3):184-191.
15. Carrasco-Labra A, Brignardello-Petersen R, Azarpazhooh A, Glick M, Guyatt GH. A practical approach to evidence-based dentistry: X How to avoid being misled by

- clinical studies' results in dentistry. *J Am Dent Assoc.* 2015;146(12):919-24.
16. Coleman BG, Johnson TM, Erley KJ, Topolski R, Rethman M, Lancaster DD. Preparing dental students and residents to overcome internal and external barriers to evidence-based practice. *J Dent Educ.* 2016;80(10):1161-9.
17. Kriger L, Moysés ST, Morita MC. *Odontologia baseada em evidências.* São Paulo: Artes Médicas; 2016.
18. Straub-morarend CL, Wankiiri-Hale C, Blanchette D, Lanning S, Bekhuis T, Smith B, et al. Evidence-Based practice knowledge, perceptions, and behavior: a multi-institutional, cross-sectional study of a population of U.S. dental students. *J Dent Educ.* 2016;80(4):430-8.
19. Hinton RJ, Cechow PC, Abdellatif H, Jones DL, McCann AL, Schneiderman ED, et al. Creating an Evidence-Based Dentistry culture at Baylor College of Dentistry: the winds of change. *J Dent Educ.* 2011;75(3):279-90.
20. Hinton RJ, McCann AL, Schneiderman ED, Dechow PC. The winds of change revisited: progress towards building a culture of evidence-based dentistry. *J Dent Educ.* 2015;79(5):499-509.
21. Kyriakoulis K, Patelarou A, Laliotis A, Wan AC, Matalliotakis M, Tsiou C, et al. Educational strategies for teaching evidence-based practice to undergraduate health students: systematic review. *J Educ Eval Health Prof.* 2016;13:34.
22. Kishore M, Panat SR, Aggarwal A, Aggarwal N, Upadhyay N, Alok A. Evidence based dental care: Integrating clinical expertise with systematic research. *J Clin Diagnostic Res.* 2014;8(2):259-62.

Correspondence to:

Prof. Dr. Sinval Adalberto Rodrigues-Junior
e-mail: rodriguesjunior.sa@unochapeco.edu.br
Universidade Comunitária da Região de Chapecó
Caixa postal 1141
Servidão Anjo da Guarda 295-D Efapi
89809-000 Chapecó/SC Brazil