

FEATURE ARTICLE

PREDOCTORAL AND POSTDOCTORAL EDUCATION ON CONE-BEAM COMPUTED TOMOGRAPHY

ALLISON BUCHANAN, DMD, MS^a, KARAN THACHIL, BS^b, CHRIS HAGGARD, DMD^b, AND SAJITHA KALATHINGAL, BDS, MS^a

^aDepartment of Oral Health and Diagnostic Sciences, Dental College of Georgia at Augusta University

^bDental College of Georgia at Augusta University

ABSTRACT

Objectives

As the use of cone beam computed tomography (CBCT) in dentistry continues to grow, questions related to appropriate radiation safety, training, and interpretation arise. Recognizing this need, the American Dental Association published an advisory statement for the safe use of CBCT in dentistry and recommended that guidelines for appropriate training be established. The purpose of this study was to assess radiation safety concerns related to CBCT and identify voids in current education on CBCT for the predoctoral dental curriculum and continuing dental education.

Methods

A survey was mailed to general practitioners, oral surgeons, and periodontists in the Georgia Dental Association ($n = 415$).

Results

One hundred twenty-one surveys were received for a response rate of 29%. Sixty-eight percent of practitioners reported using CBCT, with 89% having used it for over 2 years. Few (12.4%) had experience with CBCT in dental school. Interest in continuing dental education on CBCT was reported at 59.8% and 43.6% for current users and nonusers of CBCT, respectively. Approximately 50% reported using precautionary radiation safety measures, and the methods used were varied.

Conclusions

Although a higher survey return rate would allow for stronger evidence, this project identified some areas of education voids including radiation safety and the factors that contribute to patient dose; CBCT basics including instruction on the limitations of CBCT; CBCT anatomy and pathology with additional time dedicated to the paranasal sinuses; and interpretation.

INTRODUCTION

Since cone-beam computed tomography (CBCT) was introduced in 1998,¹⁻⁵ usage has increased and continues to grow. There is no doubt of the value of CBCT in dentistry, and its utility is well documented.⁶⁻⁹ Nonetheless, with its increasing use, questions arise related to training, interpretation, and radiation safety.¹⁰⁻¹⁵ Consequently, several specialties within dentistry and the American Dental Association (ADA) have issued position papers to address these issues.^{6-8,11,15} For example, the consensus report for the International Congress

CORRESPONDING AUTHOR:

Allison Buchanan, DMD, MS,
Department of Oral Health and
Diagnostic Sciences, Dental College
of Georgia at Augusta University, GC
2248, 1120 15th Street, Augusta, GA
30912-1241, USA. Tel.: +1 995 706
721 2264; fax: +1 995 706
721 4937.

E-mail: ahunter@augusta.edu

KEYWORDS

CBCT, Cone-beam CT, Dental
education, Radiation protection

Source of Funding: This project was supported by the American Academy of Implant Dentistry Foundation and Nobel Biocare through the David Steflik Memorial Student Research Grant (Grant # 20000-02124100-12100-64050-AAIDF00005).

Conflict of Interest: The authors have no actual or potential conflicts of interest.


Received 28 March 2017; revised 4 May 2017; accepted 6 May 2017

J Evid Base Dent Pract 2017; [1-7]
1532-3382/\$36.00

© 2017 Elsevier Inc.
All rights reserved.

doi: <http://dx.doi.org/10.1016/j.jebdp.2017.05.002>

Figure 1. Survey mailed to general practitioners (GPs), oral surgeons (OSs), and periodontists (P).



1. Which of the following best describes your dental practice?

- Practice limited to General Dentistry
- Practice limited to Oral Surgery
- Practice limited to Periodontics
- Other, please indicate: _____

2. How often do you use Cone Beam Computed Tomography (CBCT) in your practice?

- Never
- Daily
- Weekly
- Monthly
- Other, please indicate: _____

3. How long have you been using CBCT?

- Over 5 years
- Over 2 years
- Less than a year
- Other, please indicate: _____

4. Is the CBCT unit housed within your own practice?

- Yes
- No

5. Which of the following describes the primary use for CBCT at your dental practice? **You may select more than 1 option.**

- Simple Implant cases
- Complex Implant cases
- Quality of bone prior to implant placement
- Bone graft integration prior to implant placement
- Post Sinus lift assessment prior to implant placement
- Sinus pathology prior to implant placement
- Other, please indicate: _____

6. Do you use a virtual treatment planning software and surgical guides for your implant cases?

- Yes
- No
- Sometimes

Please indicate when you use software and which software is used: _____

Please turn over the page to complete the survey

7. Is a radiology report written for the CBCT scans acquired for your practice?

- Yes
- No

8. If a radiology report is written, who typically writes this report?

- Clinician ordering the CBCT scan
- Oral and Maxillofacial Radiologist
- Other, please indicate: _____

9. What factors, if any, deter the use of CBCT in your practice?

- Cost
- Increased Liability (incidental findings outside of the jaws)
- Limited access to CBCT unit
- Other, please indicate: _____

10. What is the extent of training you have received in using CBCT?

- Only the initial training provided by the manufacturer and the technical team
- Learned and utilized the technology in dental school
- Attended CEs organized by professional organizations (ADA, AAOMR, respective specialties)
- Attended CEs organized by CBCT and software manufacturers
- Other, please indicate: _____

11. Would you be interested in attending continuing dental education courses to learn more about CBCT? Please use the comment box to indicate any specific areas of interest in CBCT.

- Yes
- No

Comments in reference to what you would like more CE on for CBCT: _____

12. Which CBCT unit (manufacturer and model) does your practice use? Please use the space provided to complete this question.

13. What precautionary measures are taken to minimize radiation dose to the patient – please use the space provided to complete this question

of Oral Implantologists recommends ordering CBCT examinations based on the clinical and treatment needs of the patient to avoid unnecessary radiation exposure and interpretation of the entire field of view.¹⁴ Similarly, the ADA recommends ordering CBCT examinations based on the clinical needs of the patient and interpretation of the entire field of view.¹¹ To address radiation protection guidelines, the National Council on Radiation Protection and Measurements (NCRP) is replacing NCRP Report 145 with a new report that includes guidelines on the use of CBCT in dentistry (NCRP SC 4-5).¹⁶

The recommendations from these position papers and radiation safety reports are well justified.

For example, Lopes et al.¹³ found that most CBCT examinations reported incidental findings, 56% of which required radiographic follow-up or treatment or referral for additional evaluation. Togan et al.¹⁷ concluded that every CBCT scan should be reviewed in its entirety due to the occurrence of nondental incidental findings. Likewise, in a systematic review, Edwards et al.¹⁰ concluded that incidental findings are found relatively frequently in CBCT, and

therefore, the entire CBCT volume should be interpreted. In addition to frequent incidental findings requiring comprehensive interpretation, the radiation dose associated with CBCT is variable. According to Ludlow and Walker,¹⁸ for the same size field of view, the dose received from 1 CBCT unit can be as much as 10 times that of the dose received from a different CBCT unit. In addition, in some cases, a small field of view acquired on 1 CBCT unit can actually exceed the dose of a large field of view acquired on a different CBCT unit.¹⁹ Moreover, increasing the spatial resolution setting can double the radiation dose to the patient, for equivalent size field of views, on some CBCT units.¹⁸ Due to the complexity of the variables contributing to radiation dose from CBCT, both radiation safety guidelines and instruction on radiation safety practices are necessary.

Along with the radiation safety and interpretation recommendations, the necessity for the development of standards for CBCT education of dental students and dentists is recognized.¹¹ Accordingly, we developed a survey to assess radiation safety concerns related to CBCT and identify voids in current education on CBCT for the predoctoral dental curriculum and continuing dental education (CDE).

Download English Version:

<https://daneshyari.com/en/article/8700045>

Download Persian Version:

<https://daneshyari.com/article/8700045>

[Daneshyari.com](https://daneshyari.com)