

Awareness and Attitude among Dental Professional towards CBCT

Keerththana Balabaskaran ¹, Dr.Arathy Srinivasan .L²

¹(Saveetha Dental college, India)

²(Department of oral medicine and radiology, Saveetha Dental College, India)

Abstract:

Objectives: The present study was carried out to assess the awareness and knowledge of CBCT among practicing general dentists.

Materials and methods: A 13 multiple choice questionnaire was given to practicing general dentists to answer. A total of 50 dentists participated in the survey (21 females and 29 males).

Results: Among 50 dentists, about 82% (n=41) are aware of cone beam computed tomography used for dentomaxillofacial region and 18% (n=9) are not aware of cone beam computed tomography used for dentomaxillofacial region. out of 41 dentists about 48% got to know about CBCT through lectures and class , 12% through internet, 9.7% through journal, 17% through seminars, 7.3% during PG, 2.4% during trauma case referral and 2.4% through advertisement. Among 41 dentists about 39% attended workshops regarding CBCT and 61% did not attend any workshops. About 80.48% felt that lower radiation is the most advantage of CBCT over CT. About 87.8% answered that CBCT offers enhanced diagnosis at lower dose than CT and 7.32% contradicted this and 4.88% have no idea. About 14.63% felt that less radiation is the primary difference between CT and CBCT, 14.63% felt shape of the beam, 2.44% cost, and 2.44% quality and precision and 65.85% have no idea. About 70.73% reported that the radiation risk from CBCT is generally higher than conventional CT scans, 9.76% contradicted this and 19.51% have no idea. About 68.29% have referred their patients for CBCT while 31.71% have not referred. 2.44% guessed the cost to be less than Rs 500, 26.83% between Rs 500 – 1000, 17.07% above Rs. 1000 and 53.66% having no idea. About 48.78% reported they would choose CBCT for implant, 35% for implant and evaluation of cyst and tumors, 19.51% for all the mentioned cases. About 43.90% believed that CBCT would be used in the near future in all areas of dentistry, 7.32% believed that it will not be commonly used in routine practice and 12.2% have no idea. 39.02% thought that it is necessary for CBCT to be available at their speciality, 56.1% did not think as necessary and 4.88% have no idea. Majority of the participants thought that clinical phase should include lectures on CBCT, 14.63% and 17.07% on pre clinical and doctoral phase respectively. Majority of the participants about 95.12% are satisfied with the use of CBCT while 4.88% are not satisfied.

Conclusion: the present study shows better awareness of CBCT among dental practitioners and this study suggests that more knowledge should be gained on this emerging new technology for better diagnosis and treatment planning

Key words: questionnaire, CBCT, radiation

I. Introduction

Cone beam computed tomography (CBCT) is an imaging modality that has recently being used useful for dentomaxillofacial imaging. When compared with conventional CT scanners, CBCT unit cost less and require less space, have rapid scan time, reduce the radiation doses^{1,2,3}. The drawbacks include beam hardening and scatter from dental materials and poor soft tissue contrast^{2,3}. Common indications for CBCT in dentistry include assessment of the jaws for placement of implants ; examination of teeth and facial structures for orthodontic treatment planning; evaluation of TMJ for osseous degenerative changes, evaluation of mandibular third molar root proximity to mandibular canal prior to extraction; evaluation of teeth and bone for cysts and tumours.^{4,3}

II. Materials And Methods:

A questionnaire of 13 multiple choice questions were given to general dental practitioners. A total of 50 dentists participated in the study of which 42% are females and 58% are males. The questions were about basic difference between CT and CBCT, radiation, cost and case selection for CBCT.

Questions:

Are you aware of cone beam computed tomography used for dentomaxillofacial region?

- A. Yes
- B. No

If yes proceed to next question.....

1. **How did you get to know about CBCT?** _____

2. **Do you attend any workshops regarding CBCT?**
 - A. Yes
 - B. No

3. **Please number the following advantages of CBCT over medical CT from most important (1) to least important(6):**

A. Lower radiation dose	<input type="text"/>
B. Shorter scanning time	<input type="text"/>
C. Less expensive	<input type="text"/>
D. Occupies less space	<input type="text"/>
E. Easier to maintain	<input type="text"/>
F. Image processing is easier due to the limited beam	<input type="text"/>

4. **CBCT offers enhanced diagnosis at lower dose than CT?**
 - A. Yes
 - B. No
 - C. No idea

5. **what do you think is principal difference between CBCT and CT** _____

6. **The radiation dose and risk from CBCT is generally higher than the conventional dental radiography (IOPA, panoramic...)but lower than conventional CT scans**
 - A. Yes
 - B. No
 - C. No idea

7. **Have you ever referred your patients for CBCT imaging?**
 - A. Yes
 - B. no

8. **What do you think is the cost of CBCT for one image?** _____

9. **For what cases would you choose to use CBCT?**
 - A. Implant dentistry
 - B. Extraction of impacted teeth
 - C. Evaluation of patients with tumour or cysts
 - D. Orthodontic assessment
 - E. All the above
 - F. Other
 - G. No need

10. **To what extent do you think CBCT will be used in routine dental practice in near future?**
 - A. In all areas of dentistry
 - B. For selected dental applications which ones?
 - C. It will not be commonly used in routine practice
 - D. No idea

11. **Do you think it is necessary for a CBCT unit to be available at your speciality?**
 - A. Yes
 - B. No
 - C. No idea

12. **Which year of dental education should include lectures on CBCT?**
 - A. Preclinical phase
 - B. Clinical phase
 - C. Doctoral phase
 - D. There is no need

13. **Are you satisfied with the use of CBCT?**
 - A. Yes
 - B. No

III. Results:

The results are summarizing responses to each 13 questions in the survey.

Are you aware of cone beam computed tomography used for dentomaxillofacial region?

Among 50 dentists, about 82% (n=41) are aware of cone beam computed tomography used for dentomaxillofacial region and 18% (n=9) are not aware of cone beam computed tomography used for dentomaxillofacial region.

How did you get to know about CBCT?

out of 41 dentists who were aware of CBCT about 48% got to know about CBCT through lectures and class , 12% through internet, 9.7% through journal, 17% through seminars, 7.3% during PG, 2.4% during trauma case referral and 2.4% through advertisement. (fig 1)

Do you attend any workshops regarding CBCT?

Among 41 dentists about 39% attended workshops regarding CBCT and 61% did not attend any workshops.(table A)

Please number the following advantages of CBCT over medical CT from most important (1) to least important (6):

About 80.48% felt that lower radiation is the most advantage of CBCT over CT (fig 2).

CBCT offers enhanced diagnosis at lower dose than CT?

About 87.8% answered that CBCT offers enhanced diagnosis at lower dose than CT and 7.32% contradicted this and 4.88% have no idea. (table A)

what do you think is principal difference between CBCT and CT

About 14.63% felt that less radiation is the primary difference between CT and CBCT ,14.63% felt shape of the beam, 2.44% cost ,2.44% quality and precision and 65.85% have no idea. (fig 3)

The radiation dose and risk from CBCT is generally higher than the conventional dental radiography (IOPA, panoramic...)but lower than conventional CT scans

About 70.73% reported that the radiation risk from CBCT is generally higher than conventional CT scans, 9.76% contradicted this and 19.51% have no idea. (table A)

Have you ever referred your patients for CBCT imaging?

About 68.29% have referred their patients for CBCT while 31.71% have not referred. (table A)

What do you think is the cost of CBCT for one image?

2.44% guessed the cost to be less than Rs 500, 26.83% between Rs 500 – 1000, 17.07% above Rs. 1000 and 53.66% having no idea.

For what cases would you choose to use CBCT ?

About 48.78% reported they would choose CBCT for implant, 35% for implant and evaluation of cyst and tumors, 19.51% for all the mentioned cases.

To what extent do you think CBCT will be used in routine dental practice in near future?

About 43.90% believed that CBCT would be used in the near future in all areas of dentistry, 7.32% believed that it will not be commonly used in routine practice and 12.2% have no idea.

Do you think it is necessary for a CBCT unit to be available at your specialty?

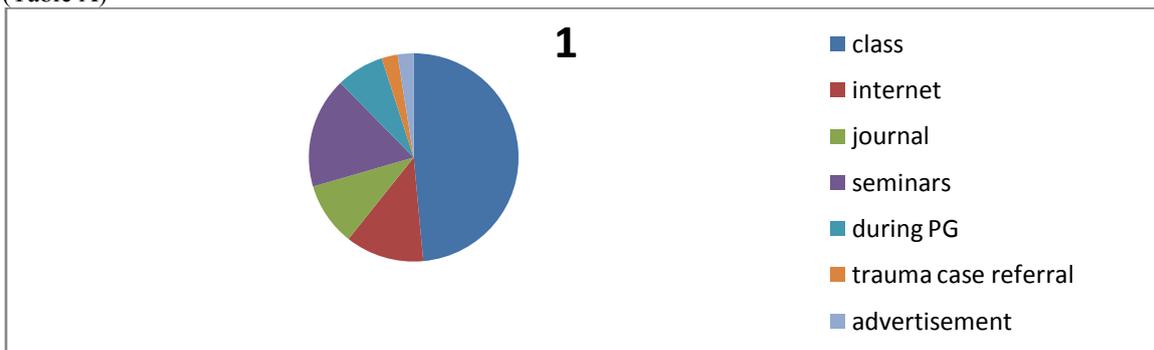
39.02% thought that it is necessary for CBCT to be available at their speciality, 56.1% did not think as necessary and 4.88% have no idea. (table A)

Which year of dental education should include lectures on CBCT?

Majority of the participants thought that clinical phase should include lectures on CBCT , 14.63% and 17.07% on pre clinical and doctoral phase respectively.

Are you satisfied with the use of CBCT?

Majority of the participants about 95.12% are satisfied with the use of CBCT while 4.88% are not satisfied. (Table A)



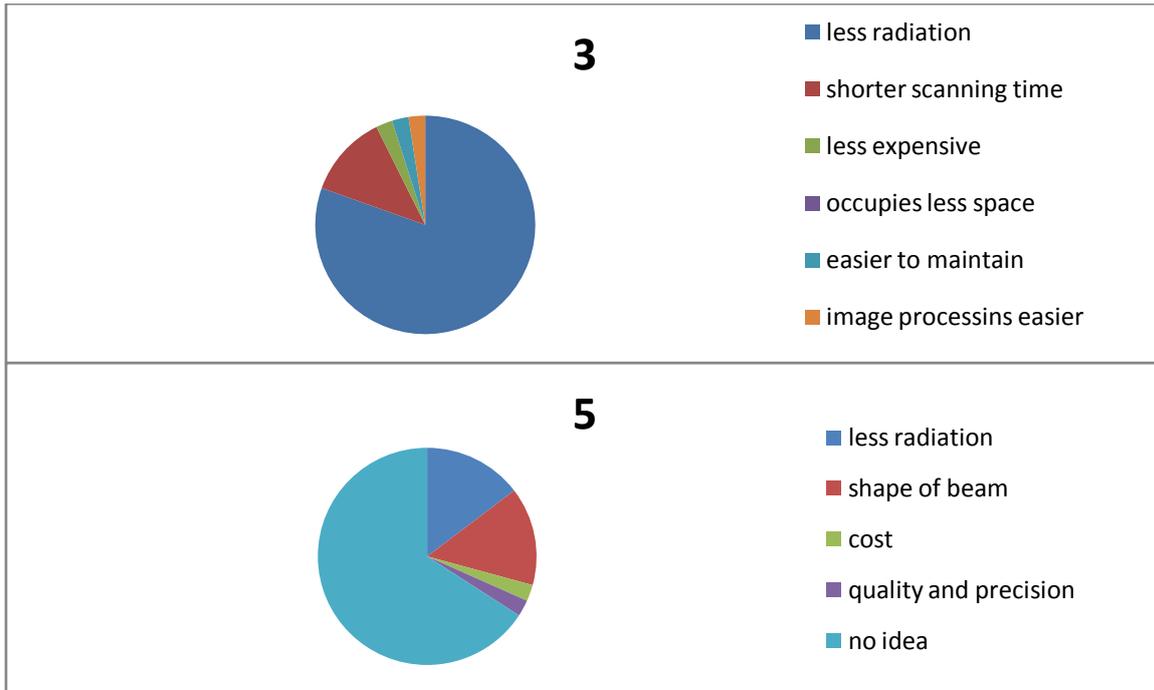


TABLE A:

Question	Yes	No	No idea
1. Do you attend any workshop regarding CBCT	39.02%	60.98%	----
2. CBCT offers enhanced diagnosis at lower dose than CT?	87.80%	7.32%	4.88%
3. Have you ever referred your patients for CBCT imaging?	68.29%	31.71%	-----
4. Do you think it is necessary for a CBCT unit to be available at your specialty?	39.02%	56.10%	4.88%
5. Are you satisfied with the use of CBCT?	95.12%	4.88%	-----

IV. Discussion:

Studies assessing dental practitioners and students’ knowledge about dental radiology have focused mainly on digital systems and radiation protection. While the literature does include one study that evaluates the effectiveness of web-based instruction in the interpretation of anatomy using CBCT images, no information appears in the literature regarding dental practitioners’ knowledge and attitudes about CBCT.

The present study used a questionnaire to gauge the level of knowledge regarding CBCT among dental practitioners.

Among 50 dentists, about 82% (n=41) are aware of cone beam computed tomography used for dentomaxillofacial region and 18% (n=9) are not aware of cone beam computed tomography used for dentomaxillofacial region. out of 41 dentists about 48% got to know about CBCT through lectures and class , 12% through internet, 9.7% through journal, 17% through seminars, 7.3% during PG, 2.4% during trauma case referral and 2.4% through advertisement. Among 41 dentists about 39% attended workshops regarding CBCT and 61% did not attend any workshops.

About 80.48% felt that lower radiation is the most advantage of CBCT over CT. About 87.8% answered that CBCT offers enhanced diagnosis at lower dose than CT and 7.32% contradicted this and 4.88% have no idea. By investigating the image quality performance can be quantified.⁵

About 14.63% felt that less radiation is the primary difference between CT and CBCT, 14.63% felt shape of the beam, 2.44% cost, 2.44% quality and precision and 65.85% have no idea. About 70.73% reported that the radiation risk from CBCT is generally higher than conventional radiographs but less than CT scans, 9.76% contradicted this and 19.51% have no idea. Dental practitioners should prescribe CBCT imaging only when they expect that diagnostic yield will benefit patient care, enhance patient safety or improve clinical outcomes significantly⁶.

About 68.29% have referred their patients for CBCT while 31.71% have not referred. 2.44% guessed the cost to be less than Rs 500, 26.83% between Rs 500 – 1000, 17.07% above Rs. 1000 and 53.66% having no idea.

About 48.78% reported they would choose CBCT for implant, 35% for implant and evaluation of cyst and tumors, 19.51% for all the mentioned cases. Chau et al compare typical patient radiation doses delivered in implant imaging with spiral computed tomography, conventional spiral tomography and CBCT in their study . they reported that CBCT delivers lowest radiation dose to organs while spiral multi slice CT delivers highest dose.⁷

About 43.90% believed that CBCT would be used in the near future in all areas of dentistry, 7.32% believed that it will not be commonly used in routine practice and 12.2% have no idea. 39.02% thought that it is necessary for CBCT to be available at their speciality, 56.1% did not think as necessary and 4.88% have no idea. Majority of the participants thought that clinical phase should include lectures on CBCT, 14.63% and 17.07% on pre clinical and doctoral phase respectively. Majority of the participants about 95.12% are satisfied with the use of CBCT while 4.88% are not satisfied.

V. Conclusion:

This study shows the awareness and attitude of dentists towards cone beam computed beam tomography.

This high-quality imaging technology should be adopted by dentists, and dental students should be provided with appropriate CBCT education supported by practical experience. More detailed information regarding CBCT should be included into dental radiology curriculum.

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