

Awareness, Knowledge and Attitude of Dental Students and General Dental Practitioners of Nagpur towards CBCT: A Questionnaire Based Analytical study

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ABSTRACT

Background: Cone beam computed tomography; an excellent diagnostic 3D imaging modality which has been recently introduced for dento-maxillofacial imaging is becoming more useful due to its high resolution, low radiation dose and low screening time. The present study was designed to assess awareness, knowledge and attitude of Dental students and General dental practitioners towards CBCT.

Aims and Objective: The study aims to evaluate awareness, knowledge and attitude of Dental students and General dental practitioners of Nagpur towards cone beam Computed Tomography.

Material and Methods: A structured, pre-validated questionnaire consisting of 19 close ended questions was given to 360 participants (90 under-graduate, 90 post-graduate, 90 Interns and 90 general practitioners) of Nagpur, Maharashtra to assess their knowledge, awareness, and attitude towards CBCT. The obtained data was analysed using statistical software and different tests.

Results: The results showed that Post Graduate students were more aware and knowledgeable, followed by Interns, UGs and General practitioners towards CBCT.

Conclusion: The results indicate low awareness & knowledge about CBCT among general practitioners. Therefore, it is recommended that efforts should be made to improve knowledge and awareness amongst General practitioners by

conducting more CDEs and workshops on various applications of CBCT.

Keywords: Awareness, Knowledge, Attitude, CBCT

INTRODUCTION

After invent of x-rays in 1895, the radiographic imaging has been greatly transformed from 2D to 3D imaging. This transformation not only improved the diagnostic accuracy of diseases but the quality of health care with improved treatment planning, less patient exposure and less time consumption. With newer advances in dento-maxillofacial imaging, Cone beam Computed Tomography (CBCT) offers a promising imaging technology.¹

With lower radiation dose, low scanning time i.e., with a single rotation covering 360 degree view of dento-maxillofacial structures and high spatial resolution, CBCT is becoming more useful in the dental and medical workplaces.²

CBCT is indicated for diagnosis and treatment planning in every speciality of dentistry. From nerve tracing in cases of third molar extraction, for implant planning and placement, for maxillofacial surgeries, in sinus pathologies, in endodontics for locating additional roots and accessory canals and in detecting vertical root fracture,

orthodontic cases and orthognathic surgeries, in evaluating cysts and tumors, in TMJ disorders, and even used in forensic dentistry.³

The present study was conducted to assess the Awareness, Knowledge and Attitude among Dental students and General practitioners of Nagpur towards CBCT.

Aims & Objective

To assess the Awareness, Knowledge and Attitude among Dental students, and General practitioner of Nagpur towards CBCT.

MATERIALS AND METHODS

A questionnaire survey was carried among Dental students and General practitioners of Nagpur towards CBCT to assess their knowledge, awareness and attitude towards CBCT. The study protocol was approved by the Institutional Ethics Committee.

The investigators distributed the structured pre-validated questionnaire among participants, i.e. Dental students (undergraduates and postgraduates), Interns and General practitioners in Nagpur. A total of 360 volunteers participated in this study. A prior consent was obtained from the participants and their confidentiality was maintained. There were total of 19 close ended questions. The completed questionnaires were collected, and obtained data was tabulated. Then the data was subjected to statistical analysis using SPSS software version 24 IBM and was analyzed category- wise into four categories i.e., Undergraduate dental students, PG students, Interns & General practitioners including specialists other than Oral Medicine & Radiology specialists. Data was arranged in frequencies (percentage) for all questions and mean percentage was calculated. Chi square and t-test were applied to compare percentage in different variables.

RESULTS

Of the total 360 participants, 90 were Undergraduates students, 90 Interns, 90 postgraduate students and 90 General Practitioners.

A series of questions related to Awareness, Knowledge & Attitude towards CBCT was assessed category-wise and gender wise (Table 1,2, 3 and 4)

I. QUESTIONS REGARDING AWARENESS

- 1) Have you heard about CBCT/DVT?
YES NO
- 2) Have you advised your patients for CBCT imaging?
YES NO
- 3) Do you think CBCT should be provided at dental institute?
YES NO
- 4) Would you choose to use CBCT as an imaging modality in your clinical practice?
YES NO
- 5) Would you choose to use CBCT in your future professional career?
YES NO
- 6) What is the reason of not using digital imaging/CBCT?
Lack of awareness
Lack of availability
- 7) Do you require guidance from a Radiologist for radiological facility design and protection?
YES NO

Table 1: RESULTS OF QUESTIONS REGARDING AWARENESS

Q no	Category(Frequency In %)				P value
	UG	PG	Intern	General Practitioner	
1	25.07	25.35	24.79	24.79	NS**
2	14.95	32.38	31.67	21.00	0.001*
3	28.62	29.26	28.62	13.50	0.001*
4	25.07	25.35	24.79	24.79	NS**
5	25.07	25.35	24.79	24.79	NS**
6	29.00	34.25	20.17	16.57	0.001*
7	25.07	25.35	24.79	24.79	NS**
Average	24.69	25.35	24.79	21.46	Total 100%

*Highly Significant**Non Significant

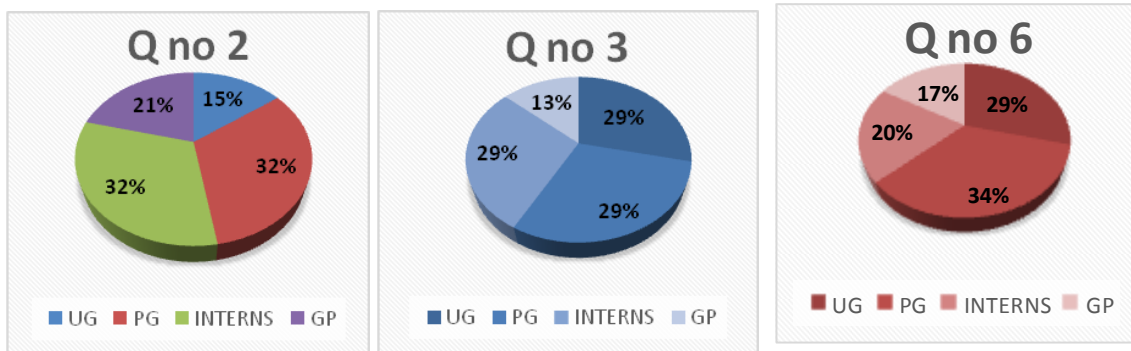


Fig 1: Pie Diagrams showing results of questions with significant values for Table 1

II. QUESTIONS REGARDING KNOWLEDGE:

8) Which technology do you prefer when you need 3-D Imaging of the head and neck region?

Computerized Tomography

Dental Volumetric Tomography/CBCT

9) What is the difference between CT and CBCT?

low radiation dose than CT

Same radiation dose as of CT

10) How do you obtain knowledge about CBCT?

Lectures CDE

11) Have you ever obtained knowledge of CBCT from your faculty?

YES NO

12) Are you aware that focused FOV/small FOV should be advised in CBCT for endodontic purpose?

YES NO

13) Are you aware of different sizes of FOV?

YES NO

Table 2: RESULTS OF QUESTIONS REGARDING KNOWLEDGE

Q no	Category (Frequency in %)				P value
	UG	PG	Intern	General Practitioner	
8	25.07	25.35	24.79	24.79	NS**
9	25.07	25.35	24.79	24.79	NS**
10	31.71	16.72	31.01	20.56	0.001*
11	30.05	28.25	23.95	17.75	0.001*
12	23.25	41.11	25.35	10.29	0.001*
13	23.25	41.11	25.35	10.29	0.001*
Average	26.4	29.64	25.87	18.07	Total-100%

*Highly Significant**Non Significant

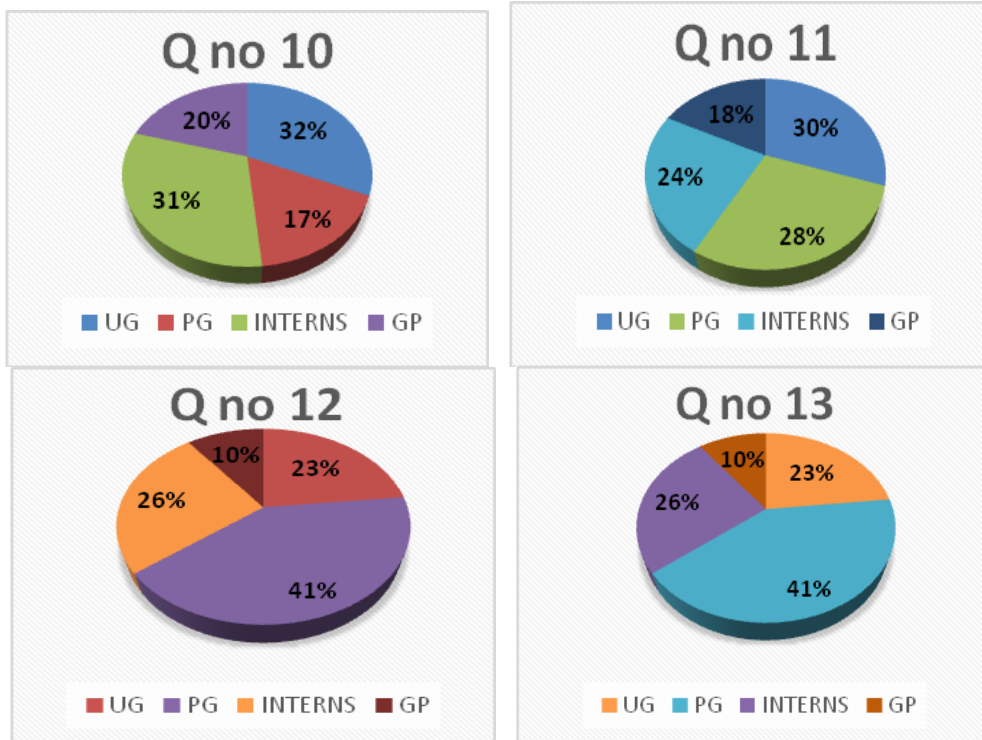


Fig 2: Pie Diagrams showing results of questions with significant values for Table 2

III. QUESTIONS REGARDING ATTITUDE

14) Are you satisfied with the use of CBCT?
 YES NO

15) Which session of BDS should include lecture on CBCT?
 Pre-clinical Clinical

16) Should there be guidelines formed for when or when not to take CBCT scan?
 YES NO

17) What is the reason of not using digital imaging/CBCT?
 Lack of awareness
 Lack of availability

18) Do you feel CDE/ Workshop should be conducted to enhance your knowledge about digital imaging/CBCT?
 YES NO

19) Should patient be referred to an Oral radiologist who is trained to handle or have enough experience in handling CBCT machine?
 YES NO

20) Should an oral Radiologist take regular training/workshop/hands on courses for evaluation of CBCT scan?
 YES NO

Table 3: RESULTS OF QUESTIONS REGARDING ATTITUDE

Q no	Category (Frequency in %)				P value
	UG	PG	Intern	General Practitioner	
14	21.00	32.38	31.67	14.95	0.001*
15	14.95	32.38	31.67	21.00	0.001*
16	14.95	32.38	31.67	21.00	0.001*
17	25.07	25.35	24.79	24.79	NS**
18	14.95	32.38	31.67	21.00	0.001*
19	25.07	25.35	24.79	24.79	NS*
20	25.07	25.35	24.79	24.79	NS*
Average	20.15	34.26	33.50	21.76	Total-100%

*Highly Significant**Non Significant

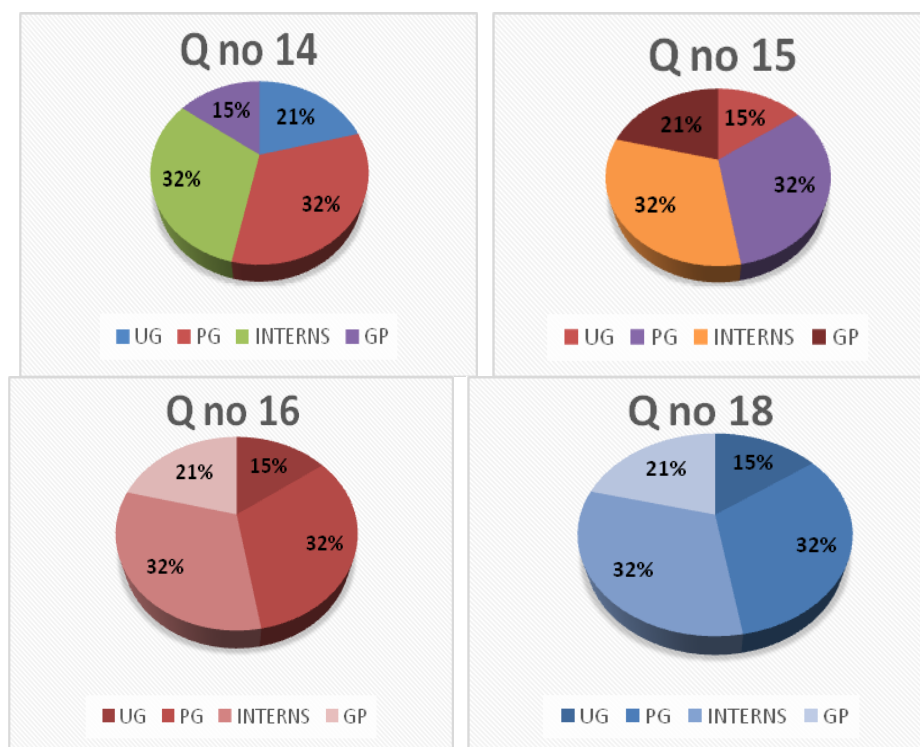


Fig 3: Pie Diagrams showing results of questions with significant values for Table 3

IV. QUESTIONS WITH SIGNIFICANT VALUES IN GENDER WISE DISTRIBUTION

5) Would you choose to use CBCT in your future professional career?
 YES NO

13) Are you aware of different sizes of FOV?
 YES NO

18) Do you feel CDE/ Workshop should be conducted to enhance your knowledge about digital imaging/CBCT?
 YES NO

TABLE 4 : SHOWING RESULTS FOR QUESTIONS WITH SIGNIFICANT VALUE IN GENDER WISE DISTRIBUTION

Q no	(Frequency in %)		P value
	FEMALE	MALE	
5	43.38	59.20	<0.001*
13	68.04	86.43	< 0.001*
18	39.73	66.43	< 0.001*
Average	50.38	70.68	-

*Highly Significant

DISCUSSION

Several radiographic imaging techniques are available for diagnosis and treatment planning of patients visiting dental office for various dental procedures.⁴ This study used a questionnaire to gauge the awareness about CBCT among dental students & general dental practitioners. It also assesses the knowledge and attitude of dentists about CBCT and their opinions on the implications of increased use of CBCT in their practices. CBCT has an important role in the diagnosis of oral and maxillofacial pathologies with reduction in radiation dose. In the present study, it is found that there is more awareness amongst the Post Graduate students (25.35%), followed by Interns (24.79%), Under Graduate students (24.69%), and General Practitioners (21.46%)(Table 1 and Fig 1). This is in accordance with the study by Mahdizadeh et al (2012)⁵ wherein they found that specialists including budding specialists are more aware about the CBCT and also they often advise CBCT for the patients. The dental institute must have CBCT and it must be used by all specialities in their daily clinical practice. In this study it has been observed that General practitioners are not very well acquainted with the advanced technologies, thus, they should be made more aware of it.

General Practitioner are only aware of implant planning but not of other uses of CBCT. Most of the General practitioner agreed that lack of availability could be the reason. CBCT is the choice of modality of imaging for dento-maxillofacial structures. It has low radiation dose as compared to CT, low scanning time and high spatial resolution. This is also in accordance with the study conducted by Yalkincaya SE et al⁶ and Chau et al(2009).⁷

There is a notable difference about the knowledge of CBCT obtained amongst Students, Interns and General Practitioner, in this study. The Post Graduate students (29.64%), have more knowledge of CBCT, followed by UGs (26.4%), Interns (25.87%), and then followed by General Practitioner (18.07%) (Table 2 and Fig 2). This observation is also in concordance with a study conducted by Reddy et al(2012).⁸ Also PGs are more aware about the Field of view(FOV), and their different sizes as compared to undergraduate Students, Interns and General practitioners.

The invent of new technology also needs a right attitude towards it, considering its advantages and disadvantages. In the present study, the positive attitude for CBCT is reflected in post graduate students (34.26%), followed by Interns (33.50%), General practitioners (21.76%) and Under Graduate students (20.15%) (Table 3 and Figure 3).This finding is in concordance with study conducted by Balabaskaran et al (2013).⁹Most of the Under Graduate students expressed that the knowledge of CBCT should be provided to them in the pre-clinical session for updating their knowledge.

The results indicate low awareness about CBCT among practicing dentists and need enhancement of knowledge toward this promising new technology. Similar findings were reported in another study done in Turkey by Kamburoglu et al(2011).¹⁰ Thus, CDEs should be conducted by Oral and Maxillofacial Radiologists regularly to enhance the knowledge of the other specialities and General practitioners. In the present study, we also found that amongst the 19 questions, three questions viz questions no 5,13 & 18 showed a significant difference between male (70.68) & females (50.38)(Table 4) in gender wise distribution suggesting that males want themselves to be more acquainted & knowledgeable to recent advances like CBCT to establish their practice, to earn their good bread and butter.

Therefore, it is concluded that-

- Precise knowledge of Oral & Maxillofacial Radiology including CBCT among dental fraternity is important due to its wide applications and profound potential of CBCT in different specialties of dentistry.
- Dental imaging is an essential tool for diagnostic and therapeutic orientation in the oral and dental surgery field.
- At student level, introduction of training in CBCT at undergraduate and PG level shall ensure that dental specialists use this technique in an efficient way.
- Awareness of CBCT in dental fraternity and necessity to include it in the curriculum is the need of the hour.
- It is further recommended that OMR departments in different dental colleges should actively participate and organize special qualification programs for dentists to increase their awareness, knowledge and attitude toward different imaging modalities.
- General dental practitioners including specialists from other specialties must gain more knowledge about indications and applications of digital imaging and CBCT for accurate diagnosis and better management of patients.

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