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Research Article

Awareness And Attitude About CBCT Amongst Dental Fraternity Of Lucknow, India

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ABSTRACT

Objective: The aim of the study was to evaluate knowledge and attitude of dental fraternity toward cone beam computed tomography in Lucknow population.

Material and Methods: A questionnaire consisting of 9 questions regarding digital radiography and cone beam computed tomography (CBCT) was given to 300 dentists from various institutions and dental practitioners in Lucknow. The attitude of present day dental fraternity toward CBCT and difference in their response by education level were assessed with chi square test.

Results: Out of 300 dentists, 81% (n=90) teaching faculty, 84% (n=120) post graduate students and 93% (n=90) of dental practitioners prefer CT over CBCT as three-dimensional imaging modality. 85% (n=300) of the total dentists reported that they would choose CBCT only for implant as an augmenting imaging modality. Only 2% of staff members, 8% of post graduate students and 7% of dental practitioners only have referred their patients for CBCT. Results showed moderate awareness of CBCT among dental practitioners.

Conclusion: The study suggests that efforts should be made to improve student's theoretical and also practical knowledge regarding CBCT through various educational programs. More knowledge should be gained on this emerging new technology for better diagnosis and treatment planning.

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INTRODUCTION

Imaging is an important diagnostic adjunct to the clinical assessment of the dental patient. Radiographic imaging forms an important part in the diagnosis and treatment of dental pathology. Traditional setup consists of a dental X-ray tube, analog intra-oral films and processing chemicals. This is the smallest and simplest X-ray diagnostic system used in a clinic, but anatomical restrictions in the dento maxillofacial region limit the projection angle to certain pre-defined planes making multiple projections at different angles difficult [1]. Accurate dimensional measurement of the jawbones is not possible. Simple linear tomography is available in most panoramic machines but inferior image quality and complicated procedure had prevented it to become a popular projection [2].

CBCT is an imaging modality that has recently become useful for dento maxillofacial imaging. When compared with conventional CT scanners [2], CBCT units cost less and require less space, have rapid scan time, limit the beam to the head and neck, reduce radiation doses and have interactive display modes that offer maxillofacial imaging and multiplanar reformation, making them more suitable for use in dental practices. CBCT provides a lower dose, lower cost alternative to conventional CT that promises to revolutionize the practice of oral and maxillofacial radiology [3,4]. Very few studies have been reported in the literature regarding the knowledge and attitude of the present day dental fraternity toward advanced oral radiographic imaging. The aim of the study was to evaluate the knowledge and attitude of the present day dental fraternity toward cone beam computed tomography.

MATERIALS AND METHODS

A survey was conducted amongst various dental institutions and private practitioners in Lucknow by getting a questionnaire of 9 questions (fig.1) filled by them only, completely filled forms were taken into consideration. The dentists were divided on the basis of their working profile as general

practitioners, academicians and post graduate students. The data was then analyzed using chi square test.

Question

- Q 1. Are you dentist or specialist? (tick most applicable)
- General dentist
 - Post graduate student
 - Staff
- Q2. Are you practicing implant in your setup?
- Yes
 - No
- Q3. Which is your most preferred mode of X ray modalities in case of implants? (tick most applicable)
- Intraoral radiograph
 - Other extraoral radiograph
 - Panoramic radiograph
- Q4. Have you heard of CBCT used specifically for dento-maxillofacial surgery?
- Yes
 - No
- Q5. How is your knowledge about CBCT?
- Not at all
 - Slight
 - Moderate
 - Considerable
 - Extremely
- Q6. Have you ever referred your patient for CBCT imaging? (tick most applicable)
- Yes
 - No
- Q7. Which one would preferred when you need 3-D imaging of head and neck?
- Computed radiography
 - Cone beam computed radiography
- Q8. How often you wish to prescribe CBCT if it is available?
- Never
 - Sometimes
 - Often

- d. Very often
e. No idea

- d. Endodontic surgery
e. Periodontal surgery
f. other

Q9. Which are of your work do you feel that CBCT will augment your work?

- a. Trauma
b. Cyst tumour
c. Implant imaging

RESULT

The results are summarizing responses to each 9 questions in the survey (fig. 2)

Fig 1: questionnaire comprising of 9 questions.

Q.1. Are you a general practitioner or a specialist?			
Dentists	Dentists (n=300)	Dentists (%)	
General dentist	90	30%	
Post graduate students	120	40%	
Staff	90	30%	

Q. 2. Are you practicing implants in your setup?		
Practicing implants	Dentists (n=300)	Dentists (%)
Yes	157	52.3%
No	143	47.5%

Q. 3. which is the your most preferred mode of X-ray modality in case of implants?		
Most preferred mode of X-ray	Dentists (n=300)	Dentists (%)
Intraoral radiograph	131	43.3%
Other extra oral modalities	27	9.0%
Panoramic radiograph	64	21.3%
CT/MRI	78	26.0%

Q.4. Have you heard of CBCT used specifically for dento-maxillofacial?			
Heard of CBCT used specifically for dento-maxillofacial	practitioners (n=90)	Post graduate students (n=120)	Staff (n=90)
Yes	88	120	90
No	4	nil	nil

Q. 5. How is your knowledge about CBCT?			
Knowledge about CBCT	practitioners (n=90)	Post graduate students (n=120)	Staff (n=90)
Not at all	0	0	0
Slightly knowledge	37	23	70
Moderately Knowledgeable	35	70	10
Considerably Knowledgeable	18	27	10
Extremely Knowledgeable	0	0	0

Q. 6. Have you ever referred your patient for CBCT imaging?			
Referred patient for CBCT imaging	practitioners (n=90)	Post graduate students (n=120)	Staff (n=90)
Yes	6	7	2
No	84	113	88

Q. 7. Which one would you prefer when you need three dimensional imaging of head and neck?			
Preference needed for three dimensional imaging of head and neck	practitioners (n=90)	Post graduate students (n=120)	Staff (n=90)
Computerized radiography	84	111	74
Cone beam computed tomography	6	19	16

Q. 8. How often would you wish to prescribe CBCT if it is available?			
Recommendation for CBCT if available	practitioners (n=90)	Post graduate students (n=120)	Staff (n=90)
Never	8	0	4
Sometimes	57	84	61
Often	12	28	20
Very often	7	6	4
No idea	6	2	1

Q. 9. Which are of your work do you feel that CBCT will augment your work?			
Feeling that CBCT will augment the work	practitioners (n=90)	Post graduate students (n=120)	Staff (n=90)
Trauma	nil	9	nil
Cyst tumor	4	nil	2
Implant imaging	80	90	79
Endodontic surgeries	6	12	9
Periodontologic diseases	nil	nil	nil
Others	nil	9	nil

Figure.2- data evaluated after the survey study.

A total of 300 dentists participated in the study which consists of 90(30%) general dentists, 90(30%) are staff and 120(40%) are post graduates(fig.3).

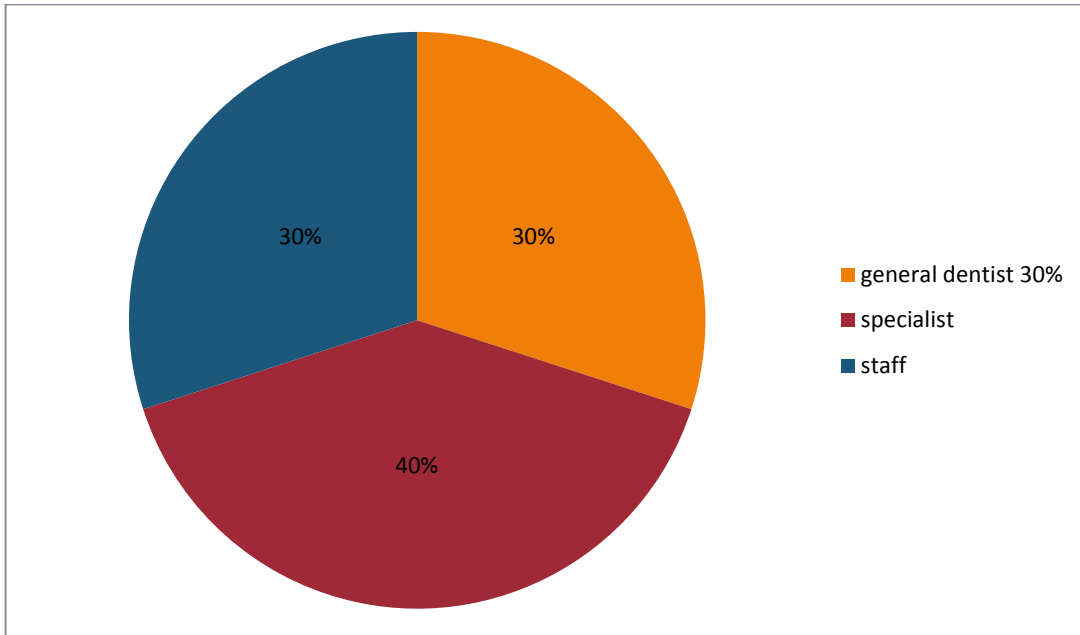


Fig 3: pie chart showing division of dentists into 3 subgroups.

Amongst the total population 80% of the staff members and 40% of dental practitioners have only slight knowledge and 60% of the M.D.S students have moderate knowledge about CBCT (fig.4).

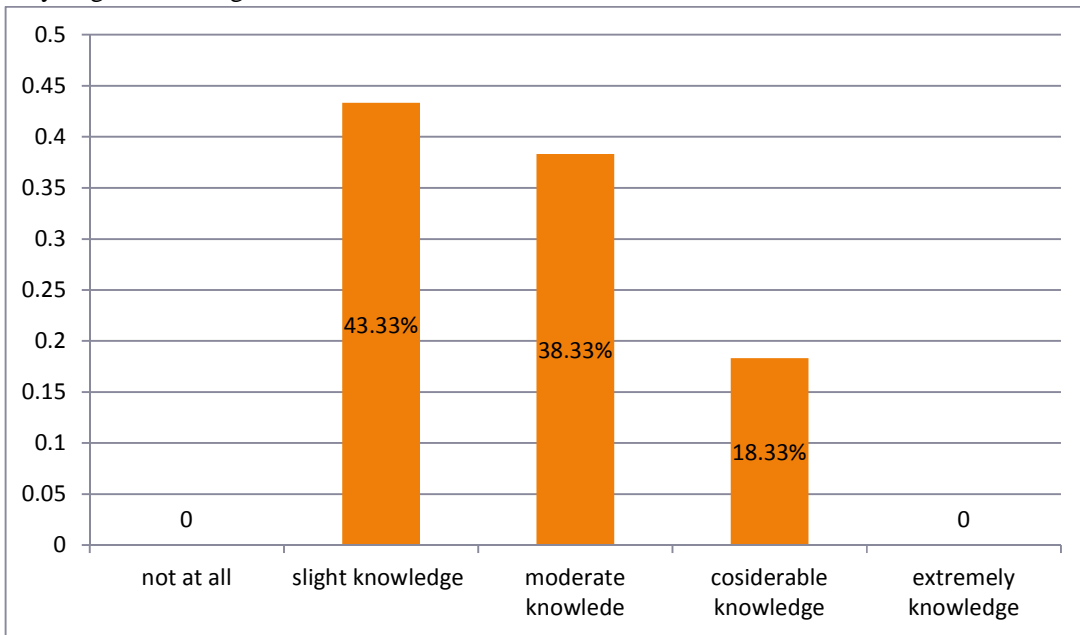


Figure 4- bar diagram illustrating the data collected about the knowledge of CBCT amongst the dentists.

Amongst the questions specifically related to CBCT one of the question was that how many have referred their patients for CBCT and it was found that only 8% of the MDS students, 2% of the staff members and 7% of the dental practitioners have referred the patients for

CBCT (fig.5) followed by the next question in same relation after which it was deduced that only 19% staff members, 15% post graduate students and 7% of dental practitioners prefer CBCT over CT as a three dimensional imaging modality(fig.6).

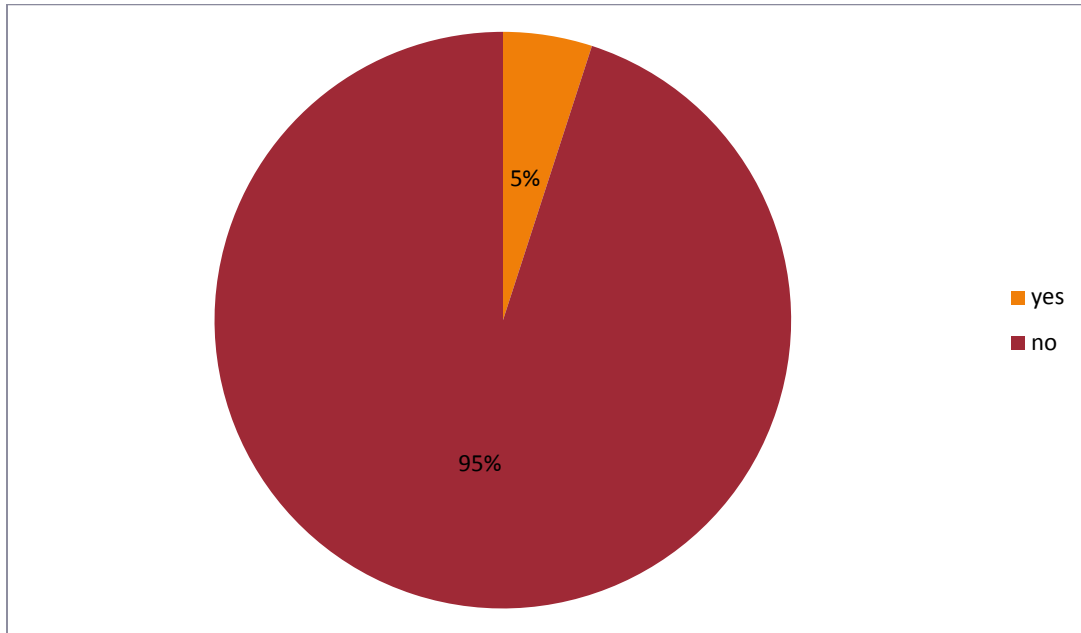


Figure 5- pie chart showing only 5% dentists referred their patients for CBCT.

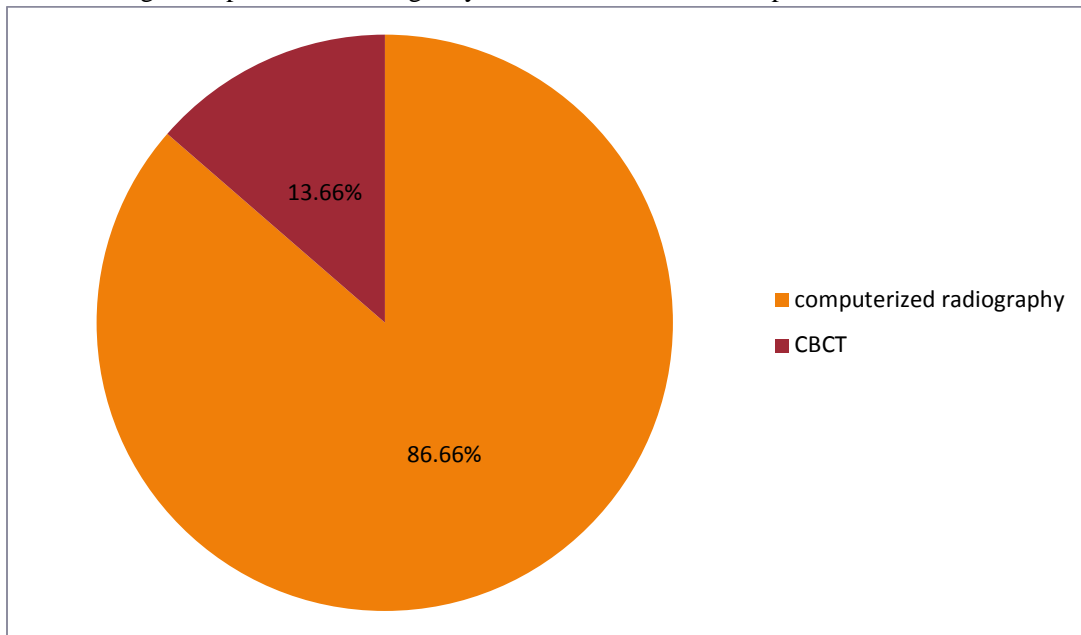


Figure 6- 3D pie chart depicting 86.66% dentists prefer CT over CBCT.

Other questions evaluation was also done following the former questions wherein it was

found that 70% staff members, 70% of MDS students and 62% of total dentists would

sometimes like to prescribe CBCT and 90% staff members, 75% of post graduate students and 90% of dental practitioners feel that CBCT

augments their work only in implant imaging(fig7).

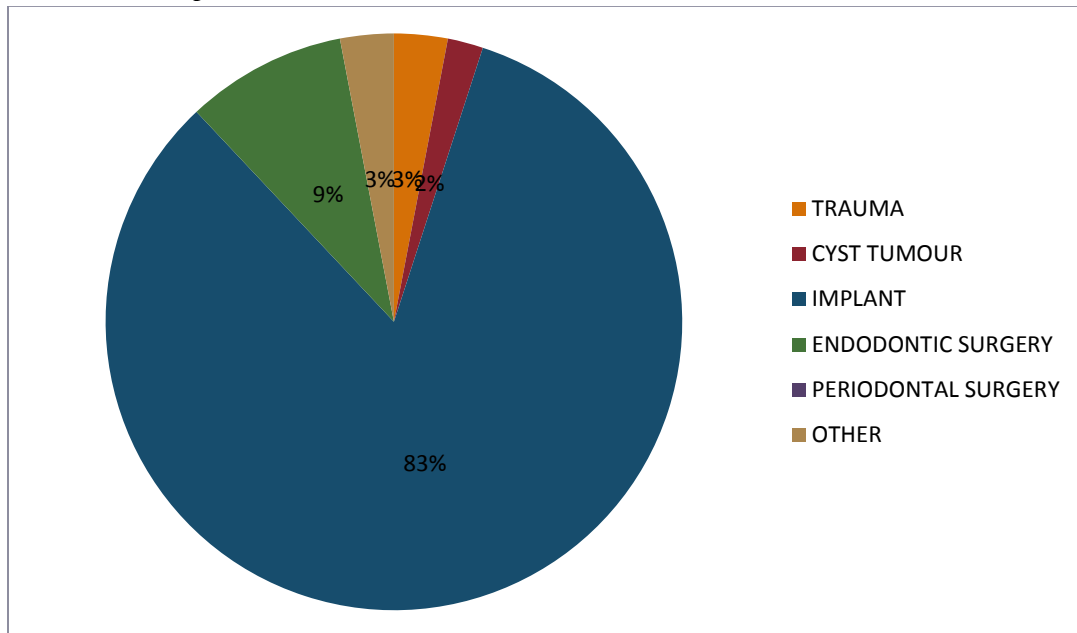


Figure 7 – pie chart showing percentage of the work which dentists feel will be augmented by CBCT.

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 study that evaluates the effectiveness of web-based instruction in the interpretation of anatomy using CBCT images, very little information appears in the literature regarding dental practitioners' knowledge and attitudes about CBCT [5].

The present study used a questionnaire to gauge the level of knowledge regarding CBCT among dental practitioners and specialists. The survey was conducted in advance of planned purchase of CBCT system in a dental institution in Lucknow, in order to gauge the level of knowledge and attitude toward CBCT, among dentists in their future dental career.

Among 300 dentists who participated in the study 30% (n=90) were post graduate teaching faculty, 40% (n=120) were the post graduate students of all specialty and 30% (n=90) were dental practitioners almost all of which (96%) are aware about cone beam computed

tomography used for dentomaxillofacial region.

One of the question in the survey was an attempt to know the knowledge regarding CBCT amongst participants and it was found that 80% of teaching faculty and 60% of post graduate students were having only slight knowledge and this would justify findings of some of the other questions like whether they would prefer CT or CBCT as a three dimensional imaging modality in dental and maxillofacial imaging where after it was found that 81% teaching faculty, 84% post graduate students and 93% of dental practitioners prefer CT over CBCT as three dimensional imaging modality. After evaluation it can be easily quantified that dentists are unaware about the advantages of CBCT over CT like smaller FOV, lower dose of radiation, less scanning time, ease of interpreting.

Another question in which maximum dentists have an idea that CBCT is an augmenting imaging modality only in case of implants, 85% (n=300) of the total dentists reported that they would choose CBCT only for implant this was

in accordance with the study conducted by Keerththana Balabaskaran and Dr.Arathy Srinivasan (2013) wherein they also found that about 50% of the dentists think that CBCT will augment their work in case of implants[6].

Lack of knowledge about CBCT can also be attributed to the next finding where in only 2% of staff members, 8% of post graduate students and 7% of dental practitioners only have referred their patients for CBCT.

CBCT being a most recent imaging modality and the radiation dose of CBCT is much less when compared to conventional CT. practical knowledge regarding the usage of this imaging modality was lacking among most of the dentists. The dentist's responses in our study clearly indicated, that education regarding digital radiography and advanced imaging modalities like CBCT must be provided through CDE programs and hands-on workshops to the present day dental fraternity for a better dentistry owing to its advantages.

CONCLUSION

With ongoing developments in dental and maxillofacial radiology amongst which CBCT being the most significant newer development, this survey was planned to know about awareness and attitude about CBCT amongst the dental fraternity in Lucknow population. We would like to conclude that the awareness about CBCT is very less amongst the dentists whether the teaching faculty or the post graduates students and even the private

practitioners because of which this newer technology has not received its due recognition. We would like to suggest that there is a need for well-guided and well-planned teaching program, Hands-on workshops and CDE programs for the present day dental fraternity.

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