

## LEVEL OF KNOWLEDGE AND ATTITUDES AMONG DENTISTS REGARDING THE USE OF CBCT IN DENTAL PRACTICE

Ana Elena Sîrghie<sup>1</sup>, Diana Amalia Grunzu (Lipșa)<sup>1\*</sup>, Carina Balcoș<sup>1</sup>,  
A. Nemțoi<sup>3</sup>, Adina Armencia<sup>1</sup>, Danisia Haba<sup>1,2</sup>

“Grigore T. Popa” University of Medicine and Pharmacy Iași, Romania

1. Faculty of Medicine

2. “Prof. Dr. N. Oblu” Emergency Clinical Hospital, Iași, Romania

“Stefan Cel Mare” University, Suceava, Romania

3. Faculty of Medicine and Biological Sciences

\*Corresponding author. E-mail: dia\_li2000@yahoo.com

LEVEL OF KNOWLEDGE AND ATTITUDES AMONG DENTISTS REGARDING THE USE OF CBCT IN DENTAL PRACTICE (Abstract): Cone Beam Computed Tomography (CBCT) is a revolutionary imaging technology in modern dentistry, providing detailed three-dimensional visualization of dental and maxillofacial structures. Despite its advantages, CBCT adoption is influenced by several factors, including costs, training, and professional experience. This study **aimed** to assess the level of knowledge and attitudes of dentists regarding CBCT usage in dental practice and identify the factors influencing its adoption. **Materials and methods:** A cross-sectional study was conducted using a structured online questionnaire completed by 113 dentists. The questionnaire collected data on demographic characteristics, professional experience, frequency of 2D and CBCT use, perceived benefits and limitations, and training levels. Statistical analyses were performed using *SPSS 26.0*, with a significance level set at  $p < 0.05$ . **Results:** The results showed that CBCT use was more frequent among specialists (46% weekly use) compared to non-specialists (33.3% daily use of 2D radiographs). Key advantages of CBCT, such as enhanced diagnostic precision and reduced need for exploratory surgical interventions, were recognized by 90.9% of dentists with over 10 years of experience. Barriers included excessive costs (56.6%) and challenges in interpreting 3D images (37.2%). Continuous training was highlighted, with 100% of dentists with 0–5 years of experience participating in specialized courses. **Conclusions:** CBCT is valued for its superior diagnostic capabilities, but its adoption is hindered by costs and training requirements. Standardized protocols and accessible education programs are essential for wider implementation in dental practices. **Keywords:** CBCT, DENTAL RADIOLOGY, IMAGING TECHNOLOGY.

### INTRODUCTION

Cone Beam Computed Tomography (CBCT) has become an essential technology in modern dental medicine, providing detailed and three-dimensional imaging of dental and maxillofacial structures. This

study aims to assess the level of knowledge and attitudes of dentists regarding the use of CBCT in their daily practice.

Three-dimensional imaging through CBCT is crucial in complex clinical scenarios that require detailed visualization of

anatomical structures. It is frequently indicated for dental implant planning, assessment of bone pathology, and the diagnosis of complex endodontic lesions. Additionally, CBCT is valuable for analyzing the temporomandibular joint (TMJ), advanced orthodontic treatments, and the evaluation of dento-maxillary trauma (1, 2). Furthermore, this method is preferred for the precise localization of mandibular canals, maxillary sinuses, and other surgically critical structures (3).

CBCT provides detailed three-dimensional visualization, enabling more precise clinical planning and execution of treatments. This technology allows for superior analysis of bone structures and complex dental anatomy, improving the diagnosis of complex pathologies and reducing the risks associated with surgical interventions (4, 5). Compared to conventional computed tomography (CT), CBCT involves lower radiation doses and provides images in a shorter time frame (6). Additionally, the images can be digitally stored and analyzed, facilitating their integration into patient documentation and communication with other specialists (7).

Despite its significant advantages, the use of CBCT comes with certain limitations. The high costs associated with equipment acquisition and investigation procedures may pose a barrier for both dental practices and patients (8). Furthermore, interpreting 3D images requires specialized training, and the lack thereof can lead to diagnostic errors (5). Another disadvantage is the large file sizes generated, which may necessitate advanced computer systems for management. Moreover, although the radiation dose is lower compared to conventional CT, it remains higher than that of 2D radiographs, necessitating cau-

tious and justified use (6, 9).

Studies conducted in recent years highlight significant variability in the level of knowledge among dentists regarding the use of CBCT. Research shows that dentists who have participated in continuous education and specialized training programs generally demonstrate a better understanding of the indications, limitations, and advantages of CBCT. For example, a study by Alamri *et al.* (2012)

(10) revealed that while most general dentists are familiar with the basic applications of CBCT, they have limited knowledge when it comes to advanced interpretation of 3D images. This underscores the importance of integrating CBCT-related education into dental school curricula and continuous professional development programs.

Another aspect explored in several studies is the confidence level of dentists in using CBCT. According to research by Pauwels *et al.* (2013) (11), specialists in oral and maxillofacial surgery or implantology exhibit the highest confidence in utilizing this technology due to their experience in interpreting three-dimensional images. However, challenges such as limited access to equipment, excessive costs, and the need for additional training remain significant barriers. Studies also emphasize that only a small percentage of dentists possess detailed knowledge of radiation protection principles associated with CBCT usage, highlighting an urgent need to enhance education in this area (11, 12). In Romania, the number of studies on this topic is extremely limited, which is why the purpose of this study was to investigate the level of knowledge and attitudes of dentists regarding the use of CBCT in dental practice, as well as to identify the factors influencing the use of CBCT

in dental clinics.

## MATERIALS AND METHODS

**Study design.** This cross-sectional study was conducted using a structured questionnaire designed for dentists, aiming to evaluate practices and perceptions regarding the use of 2D and 3D imaging (CBCT) in dental diagnosis and treatment. The questionnaire was developed to collect data on the frequency of use of these imaging methods, their clinical applicability, perceptions of their advantages and disadvantages, as well as the dentists' level of comfort in interpreting radiological images.

The questionnaire included demographic questions (age, gender, specialty, and professional experience) and specific sections on the use of 2D radiography and CBCT, the advantages and limitations of each method, the clinical scenarios in which they are applied, and the challenges encountered. Additionally, it investigated aspects related to professional training, knowledge of radiation protection, and the factors influencing clinical decisions regarding the use of these technologies.

Participation in the study was voluntary and anonymous, open to both general dentists and specialists. Data were collected through self-administered questionnaires, completed online via the Survio platform. The questionnaire included a combination of closed-ended, multiple-choice questions and open-ended questions to allow for detailed expression of opinions. The estimated time for completing the questionnaire was 15–20 minutes.

**Participant selection.** This analytical cross-sectional study included a representative sample of dentists, varying in age, gender, professional experience, and geographic location. The participants were

informed about the purpose of the study, and completing the online questionnaire served as informed and mandated consent, eliminating the need for a signed consent form.

**Data collection.** The questionnaire was designed to collect information on the frequency of use, perceptions, and experiences of dentists with radiological imaging techniques. It included questions about the demographic and professional characteristics of respondents, the frequency of 2D and 3D radiology use, and the clinical contexts where these methods are essential. Additionally, the questionnaire explored the advantages and challenges associated with these techniques, such as costs, image interpretation, and equipment access.

Another critical aspect evaluated was the respondents' competence in radiological imaging and their level of professional training, with questions about participation in training courses and the need for additional education. The questionnaire also investigated the impact of imaging on therapeutic decision-making, the reduction of exploratory surgical interventions, and the improvement of patient communication. Furthermore, topics related to workplace safety and radiation protection, including known protection methods and the risks associated with radiation exposure, were addressed.

Data collection was conducted via the completion of the questionnaire in physical or electronic format, with participation being voluntary and confidential. The varied structure of the questions, including grids, evaluation scales, and open-ended responses, allowed for detailed insights into the use of radiological imaging in dentistry. The collected results will contribute to understanding current practices

and identifying training needs in this field.

The data analysis was conducted using *SPSS version 26.0 software* (IBM, USA).

Statistical tests such as the chi-square test were employed to compare the frequencies of categorical variables, and the t-test was used to analyze differences in means. The level of statistical significance was set at  $p < 0.05$ , confirming the relevance of observed differences in the use of 2D radiographs and CBCT based on specialization and professional experience.

**RESULTS**

The data presented in first table highlight the demographic characteristics of the study sample, which consisted of 113 participants. The average age of the participants was 42.88 years, with a standard deviation (SD) of 7.22 years, indicating a moderate variation in age within the sample; the youngest participant was 30 years old, while the oldest was 57 years old. The majority of participants were women (53.1%,  $n = 60$ ), while men accounted for 46.9% ( $n = 53$ ). Of the participants, 55.8% ( $n = 63$ ) did not indicate having a specific specialization ("no"), while 44.2% ( $n = 50$ ) reported holding a specialization ("yes"). Most participants (58.4%,  $n = 66$ ) had more than 10 years of experience, followed by those with 6–10 years of experience (35.4%,  $n = 40$ ), while only a small percentage (6.2%,  $n = 7$ ) had between 0 and 5 years of experience.

Table II highlights the use of 2D radiography and 3D imaging (CBCT) in dental practice, correlated with specialization and professional experience. Regarding the frequency of 2D radiography use, most non-specialist dentists reported daily usage (33.3%), whereas specialized dentists predominantly used this technique occasional-

ly (88.0%). Similarly, those with limited experience (0–5 years) used 2D radiography only occasionally (100%), while dentists with 6–10 years of experience tended to use it daily (40%). In terms of CBCT usage, non-specialist dentists utilized the technology both daily (33.3%) and weekly (34.9%), whereas specialized dentists predominantly used it weekly (46.0%).

**TABLE I.**  
**Demographic characteristics**  
**of the study sample**

|                 | No.  | %    |
|-----------------|--|------|
| Age             | 42.8761± 7.21745 years old<br>(min. age 30 years, max. age 57 years) |      |
| Gender          |  |      |
| Female          | 60   | 53.1 |
| Male            | 53   | 46.9 |
| Specialty       |  |      |
| No              | 63   | 55.8 |
| Yes             | 50   | 44.2 |
| Work experience |  |      |
| 0-5 years       | 7  | 6.2  |
| 6-10 years      | 40   | 35.4 |
| > 10 years      | 66   | 58.4 |

The clinical situations in which 3D imaging is considered essential are diverse, with 88.0% of specialized dentists and 65.2% of those with over 10 years of experience frequently selecting the response "All of the above." Additionally, the majority of participants believe that 3D imaging reduces the need for exploratory surgical interventions, with this opinion being more prevalent among non-specialist dentists (76.2%) and those with extensive experience (78.8%). Regarding the advantages of 3D imaging, "All of the above" was the dominant response, chosen by 82.0% of

specialized dentists and 90.9% of those with over 10 years of experience. Decisions regarding the use of 2D or 3D radiology based on costs varied: specialized dentists frequently opted for more financially ac-

cessible methods (62.0%), while non-specialists (46.0%) prioritized method efficiency, regardless of cost. These trends were supported by statistically significant values ( $p < 0.05$ ) in most comparisons.

**TABLE II.**  
**Distribution of Questionnaire Responses by Specialty and work Experience (I)**

|   | Specialty |       | Work Experience |            |            |
|---|-----------|-------|-----------------|------------|------------|
|   | No        | Yes   | 0-5 years       | 6-10 years | > 10 years |
| <i>How often do you use 2D radiographs in your dental practice?</i>   |           |       |                 |            |            |
| Daily   | 33.3%     | 4.0%  |                 | 40.0%      | 10.6%      |
| Weekly  | 25.4%     | 8.0%  |                 | 10.0%      | 24.2%      |
| Occasionally  | 41.3%     | 88.0% | 100.0%          | 50.0%      | 65.2%      |
| p   | 0.000     |       | 0.001           |            |            |
| <i>How often do you use 3D imaging (CBCT) in your dental practice?</i>  |           |       |                 |            |            |
| Daily   | 33.3%     |       |                 | 37.5%      | 9.1%       |
| Weekly  | 34.9%     | 46.0% |                 | 32.5%      | 48.5%      |
| Occasionally  | 31.7%     | 54.0% | 100.0%          | 30.0%      | 42.4%      |
| p   | 0.000     |       | 0.000           |            |            |
| <i>In which clinical situations do you consider the use of imaging essential 3D (CBCT)?</i>                     |           |       |                 |            |            |
| Dental implant planning   |           | 2.0%  |                 |            | 1.5%       |
| Assessment of bone pathology  | 33.3%     | 10.0% |                 | 25.0%      | 24.2%      |
| Treatment of complex endodontic lesions   | 33.3%     |       |                 | 37.5%      | 9.1%       |
| All of the above  | 33.3%     | 88.0% | 100.0%          | 37.5%      | 65.2%      |
| p   | 0.000     |       | 0.002           |            |            |
| <i>What, in your opinion, is the main advantage of using 3D imaging (CBCT)?</i>                                 |           |       |                 |            |            |
| Detailed visualization of bone structures   | 9.5%      | 4.0%  |                 | 20.0%      |            |
| All of the above  | 73.0%     | 82.0% | 100.0%          | 50.0%      | 90.9%      |
| Detailed visualization of bone structures + Precision in treatment planning                                     | 17.5%     | 14.0% |                 | 30.0%      | 9.1%       |
| p   | 0.427     |       | 0.008           |            |            |
| <i>Do you believe that the use of 3D radiology has reduced the need for exploratory surgical interventions?</i> |           |       |                 |            |            |
| Yes   | 76.2%     | 52.0% | 100.0%          | 37.5%      | 78.8%      |
| No  |           | 40.0% |                 | 15.0%      | 21.2%      |
| Not sure  | 23.8%     | 8.0%  |                 | 47.5%      |            |
| p   | 0.000     |       | 0.000           |            |            |

**Level of knowledge and attitudes among dentists regarding the use of CBCT in dental practice**

|  | Specialty |       | Work Experience |            |            |
|--|-----------|-------|-----------------|------------|------------|
|  | No        | Yes   | 0-5 years       | 6-10 years | > 10 years |
| <i>Have you attended specialized training courses on the use and interpretation of 3D imaging?</i> |           |       |                 |            |            |
| Yes, I have attended multiple courses  | 11.1%     | 2.0%  | 100.0%          | 2.5%       |            |
| Yes, I have attended one course  | 46.0%     | 58.0% |                 | 30.0%      | 69.7%      |
| No, but I plan to attend   | 42.9%     | 40.0% |                 | 67.5%      | 30.3%      |
| p  | 0.129     |       | 0.000           |            |            |
| <i>To what extent do you consider 3D imaging necessary for accurate diagnosis in dentistry?</i>    |           |       |                 |            |            |
| Essential  | 41.3%     | 18.0% |                 | 85.0%      | 1.5%       |
| Useful, but not essential  | 58.7%     | 82.0% | 100.0%          | 15.0%      | 98.5%      |
| p  | 0.008     |       | 0.000           |            |            |
| <i>How do you decide to use 2D or 3D radiology based on the associated costs?</i>                  |           |       |                 |            |            |
| I always choose the most efficient method, regardless of cost                                      | 46.0%     | 22.0% |                 | 50.0%      | 30.3%      |
| I choose the more financially accessible method for the patient                                    | 9.5%      | 62.0% |                 | 20.0%      | 43.9%      |
| I discuss the options with the patient and decide together   | 44.4%     | 16.0% | 100.0%          | 30.0%      | 25.8%      |
| p  | 0.000     |       | 0.000           |            |            |

Table III presents data on dentists' opinions and practices regarding the use of 2D and 3D imaging, correlated with specialization and professional experience. Most specialized dentists (57.1%) believe that the use of 2D and 3D radiology should be standardized through clear protocols, while non-specialists are more divided, with a significant proportion (34.4%) considering that the decision should remain at the discretion of the dentist. Dentists with limited experience (0–5 years) unanimously support standardization (100%), whereas those with over 10 years of experience tend to favor decision-making freedom (47.6%). The determining factors for using CBCT include the ability to visualize structures in detail, with this option being predominant among specialized dentists (89.8%) and those with 6–10 years of experience (87.5%).

Regarding communication with radiologists, most dentists report contacting them rarely, with a higher percentage among non-specialists (90.2%) and those with limited experience (100%). In cases of disagreement with a radiologist's evaluation, specialized dentists tend to rely on their own judgment (63.3%), while non-specialists prefer to request a second opinion (44.3%). Additionally, discussing CBCT with the patient is considered necessary by a majority of specialized dentists (69.4%) and those with extensive experience (88.9%). In contrast, non-specialists and less experienced dentists (0–5 years) do not consider patient discussions mandatory, possibly indicating a lack of awareness or differing priorities. Statistically significant p-values ( $p < 0.05$ ) support the relevance of the observed differences.

TABLE III.  
Distribution of Questionnaire Responses by Specialty and Work Experience (II)

|  | Specialty |       | Work Experience |            |            |
|--|-----------|-------|-----------------|------------|------------|
|  | No        | Yes   | 0-5 years       | 6-10 years | > 10 years |
| <i>Do you believe that the use of 2D and 3D radiography should be standardized in dental practices?</i>                      |           |       |                 |            |            |
| Yes, there should be clear protocols for the use of each imaging method  | 31.1%     | 57.1% | 100.0%          | 32.5%      | 42.9%      |
| No, dentists should have the freedom to decide based on individual cases   | 34.4%     | 42.9% |                 | 30.0%      | 47.6%      |
| Only for certain specialties, such as implantology or maxillofacial surgery  | 34.4%     |       |                 | 37.5%      | 9.5%       |
| p  | 0.000     |       | 0.000           |            |            |
| <i>What factors influence your decision to use 3D imaging (CBCT) instead of 2D radiographs the most?</i>                     |           |       |                 |            |            |
| Case complexity  | 34.4%     | 10.2% |                 | 12.5%      | 33.3%      |
| The ability to visualize structures in detail  | 65.6%     | 89.8% | 100.0%          | 87.5%      | 66.7%      |
| p  | 0.003     |       | 0.017           |            |            |
| <i>How often, if ever, do you contact the radiologist/dental and maxillofacial radiology specialist regarding a result?</i>  |           |       |                 |            |            |
| Rarely   | 90.2%     | 63.3% | 100.0%          | 77.5%      | 76.2%      |
| Sometimes  | 9.8%      | 36.7% |                 | 22.5%      | 23.8%      |
| p  | 0.001     |       | 0.348           |            |            |
| <i>If you disagree with the evaluation of the radiologist/dental and maxillofacial radiology specialist, what do you do?</i> |           |       |                 |            |            |
| I rely on my own judgment  | 36.1%     | 63.3% |                 | 65.0%      | 42.9%      |
| I request another consultation from the same radiologist   | 44.3%     | 2.0%  | 100.0%          | 15.0%      | 23.8%      |
| I seek a second opinion from a colleague   | 19.7%     | 34.7% |                 | 20.0%      | 33.3%      |
| p  | 0.000     |       | 0.000           |            |            |
| <i>Do you believe a prior discussion with the patient regarding CBCT is necessary?</i>                                       |           |       |                 |            |            |
| Yes  | 36.1%     | 69.4% |                 |            | 88.9%      |
| No   | 63.9%     | 30.6% | 100.0%          | 100.0%     | 11.1%      |
| p  | 0.001     |       | 0.000           |            |            |

The advantages of using CBCT (Cone Beam Computed Tomography) compared to other radiological evaluation methods, are illustrated in first figure. The most significant advantages highlighted include shorter time for acquisition and interpreta-

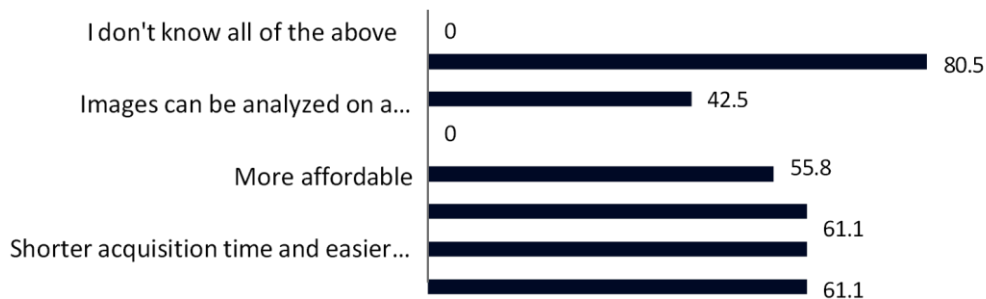
tion (55.8%), lower radiation exposure compared to other methods (61.1%), a more useful three-dimensional structure (61.1%), and better clarity of anatomical relationships (61.1%).

Additionally, 42.5% of respondents

## Level of knowledge and attitudes among dentists regarding the use of CBCT in dental practice

found the ability to analyze images on a computer beneficial. The option "All of the above" was selected by 80.5% of participants, suggesting that the majority perceive CBCT as offering a comprehensive set of

benefits. Notably, no respondent considered CBCT cheaper than other methods or reported being unaware of its advantages, indicating a clear perception of this technology's superiority among the respondents.

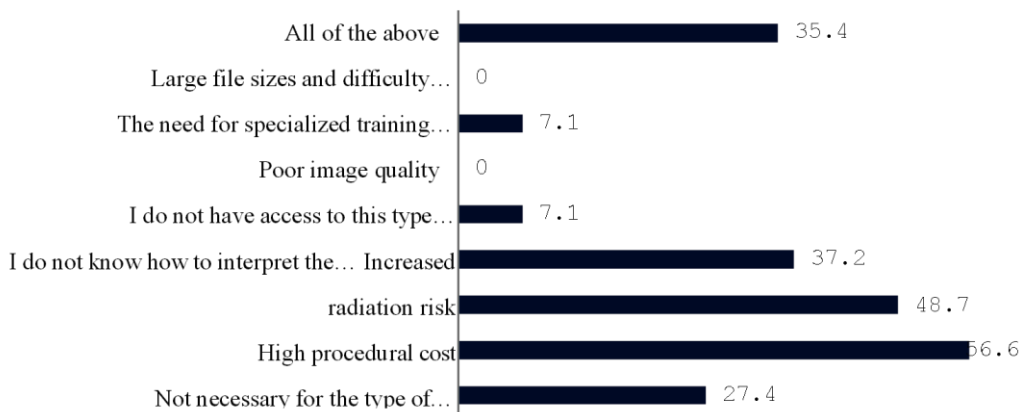


**Fig. 1.** The advantages of CBCT compared to other radiological evaluation methods

The main reasons why CBCT is not frequently used are presented in second figure. The most significant obstacle identified is the high procedural cost (56.6%), followed by the increased radiation risk (48.7%) and the difficulty in interpreting results (37.2%). Additionally, 27.4% of respondents consider CBCT unnecessary for the type of diagnosis they perform. Factors such as the need for specialized

training (7.1%) and lack of access to this technology (7.1%) were mentioned to a lesser extent. Notably, file size and image quality were not considered obstacles, as they were not selected by any respondent.

Furthermore, 35.4% of participants chose the option "All of the above," indicating that for many users, the barriers to CBCT adoption are multiple and interconnected.

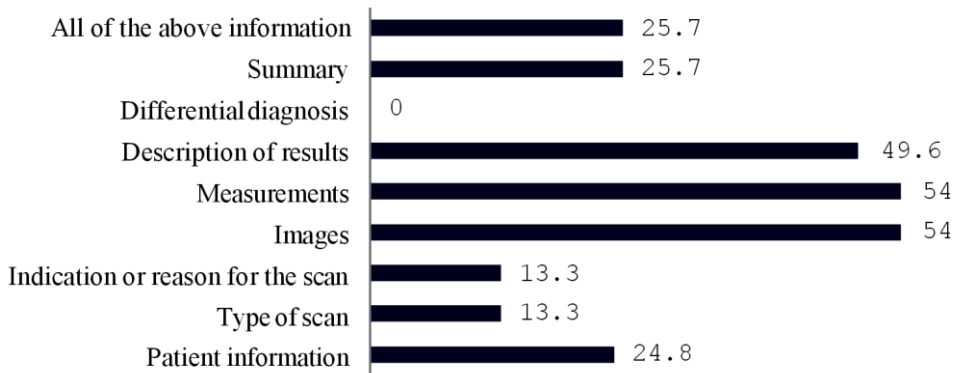


**Fig. 2.** Reasons for the Infrequent Use of CBCT



Figure 3 reflects users' expectations regarding the information included in a CBCT report. The most requested elements are measurements (54%) and images (54%), indicating the importance of visual and quantifiable details in data interpretation. The description of results is also considered essential (49.6%), while patient information is expected by 24.8% of respondents. The options "All of the above" and "Summary" were selected by 25.7%, suggesting that a significant number of users prefer a comprehensive and well-structured report. In contrast, differential diagnosis was not considered relevant, as it was not selected by any respondent. Other details, such as scan indication and type, were mentioned to a lesser extent (13.3%), indicating that users focus more on the imaging and analytical content of the report.

were selected by 25.7%, suggesting that a significant number of users prefer a comprehensive and well-structured report. In contrast, differential diagnosis was not considered relevant, as it was not selected by any respondent. Other details, such as scan indication and type, were mentioned to a lesser extent (13.3%), indicating that users focus more on the imaging and analytical content of the report.



**Fig. 3.** Users' expectations regarding the information included in a CBCT report

### DISCUSSION

Cone Beam Computed Tomography (CBCT) is recognized as a superior imaging technology compared to 2D radiographs due to its ability to provide detailed three-dimensional images of bone and dental structures.

The study results indicate that CBCT usage is more frequent among specialized dentists (46% use CBCT weekly) compared to non-specialists, where daily usage reaches 33.3%. These findings are supported by the scientific literature, which highlights the increasing adoption of CBCT in implantology, orthodontics, and oral surgery due to its enhanced diagnostic accuracy (14,15). Recent studies also emphasize that CBCT is frequently used in dental

practice for the evaluation of bone pathologies and orthodontic treatment planning, aligning with the trends observed in this study.

Regarding the frequency of 2D radiograph usage, the data indicate that they are used daily by 33.3% of non-specialist dentists but by only 4% of specialists, who predominantly prefer occasional use (88%). This trend is confirmed by recent studies suggesting that 2D radiographs remain useful for routine diagnostics, whereas CBCT is preferred for complex cases requiring detailed three-dimensional information (16). On the other hand, dentists with 6–10 years of experience use 2D radiographs daily in 40% of cases, indicating a progressive adaptation to new technologies

as professional experience accumulates.

An important aspect identified in the study is the perception of CBCT advantages, with 90.9% of dentists with over 10 years of experience considering that 3D imaging offers superior benefits compared to all other available methods. These findings are supported by the scientific literature, which highlights that CBCT provides enhanced accuracy in treatment planning and reduces risks associated with surgical interventions (17). Additionally, CBCT usage has been correlated with a decrease in the need for exploratory surgical interventions, a trend also observed in this study, where 78.8% of experienced dentists reported that CBCT has significantly reduced the necessity for surgical exploration.

On the other hand, a major obstacle to CBCT adoption remains its high cost, which is perceived as a limiting factor by 56.6% of respondents. The scientific literature confirms this issue, indicating that the high price of equipment and associated scanning costs are barriers to the widespread adoption of CBCT technology (18). Nevertheless, specialized dentists tend to prioritize financial accessibility for patients (62%), whereas non-specialists (46%) prefer efficiency regardless of cost, highlighting differences in professional approaches.

The study also indicates that CBCT image interpretation is perceived as a challenge, with 37.2% of respondents considering it an obstacle. This trend is confirmed by recent literature, which suggests that the lack of specialized training can lead to difficulties in accurately interpreting three-dimensional images (19). Furthermore, studies emphasize the importance of training programs for the optimal use of CBCT, which is supported by the study results,

where 100% of dentists with 0–5 years of experience reported participating in training courses.

The study findings are largely consistent with recent scientific literature, confirming the advantages of CBCT in dental diagnostics while also highlighting cost and training-related barriers. The study underscores that, although CBCT is an advanced technology, its optimal use depends on factors such as professional experience, dentist specialization, and financial accessibility.

## **CONCLUSIONS**

The study highlights significant differences in the use of 2D radiographs and CBCT based on specialization and professional experience. Non-specialist dentists frequently use 2D radiographs, while specialists prefer 3D imaging, utilizing it more frequently on a weekly basis. CBCT is considered essential for the diagnosis and planning of complex treatments, particularly among experienced dentists, who recognize its role in reducing the need for exploratory surgical interventions.

Although cost and image interpretation challenges are perceived as barriers, most respondents acknowledge the advantages of CBCT, indicating the necessity of standardizing its use. The study emphasizes the importance of continuous professional training, revealing that dentists with limited experience actively participate in specialization courses. This suggests a growing trend in CBCT adoption in the future of dental practice.

## **CONFLICTS OF INTEREST AND FUNDING**

All the authors declare no funding received and no conflict of interest.

## REFERENCES

1. Scarfe WC, Farman AG. Cone beam computed tomography: A paradigm shift for clinical dentistry. *Australian Dental Journal* 2008; 53(1): 64-74.
2. White SC, Pharoah MJ. *Oral Radiology: Principles and Interpretation* (7<sup>th</sup> ed.). Elsevier, 2014.
3. Pauwels R, Beinsberger J, Collaert B, *et al.* Effective dose range for dental cone beam computed tomography scanners. *European Journal of Radiology* 2012; 81(2): 267-271.
4. Patel S, Dawood A. The use and applications of cone beam computed tomography in endodontics. *International Endodontic Journal* 2007; 40(10): 825-826.
5. Harris D, Buser D. Clinical applications of cone beam computed tomography in dental practice. *International Journal of Oral & Maxillofacial Implants* 2008; 23(5): 947-957.
6. Ludlow JB, Ivanovic M. Comparative dosimetry of dental CBCT devices and 64-slice CT for oral and maxillofacial radiology. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology* 2008; 106(1): 106-114.
7. Angelopoulos C. Image quality assessment in cone beam computed tomography. *Seminars in Orthodontics* 2011; 17(1): 17-24.
8. Price C, Thong W, Clayton N. Economic considerations of cone beam computed tomography in dentistry. *British Dental Journal* 2012; 212(7): 365-369.
9. European Commission. Radiation protection no. 172: Cone beam CT for dental and maxillofacial radiology - Evidence-based guidelines. *Luxembourg: Office for Official Publications of the European Communities*, 2012.
10. Alamri HM, Sadrameli M, Alshalhoob M, Alshehri MA, Sayed SE. Applications of CBCT in dental practice: A review of the literature. *General Dentistry* 2012; 60(5): 390-400.
11. Pauwels R, Jacobs R, Bogaerts R, Bosmans H. Impact of CBCT on diagnostic thinking in dentistry: A systematic review. *Dento Maxillo Facial Radiology* 2013; 42(8): 20130277.
12. Horner K, Jacobs R, Schulze R. Dental CBCT equipment and facilities: Aspects of radiation protection. *Radiation Protection Dosimetry* 2019; 183(1-2): 28-36.
13. Rodrigues J, Bóscolo FN, Haiter-Neto F, Cadioli FA, de Almeida SM. Cost-effectiveness analysis of CBCT in different dental specialties. *Dento Maxillo Facial Radiology* 2021; 50(4): 20200343.
14. Gupta J, Prabhat MP, Anamika S. Clinical applications of CBCT in dentistry: A review. *Journal of Oral and Maxillofacial Radiology* 2019; 7(1): 10-17.
15. Scarfe WC, Farman AG. What is cone beam CT and how does it work? *Dental Clinics of North America* 2020; 64(2): 175-190.
16. Kapila SD, Nervina JM. CBCT in orthodontics: Assessment of treatment outcomes and indications for its use. *Dental Clinics of North America* 2015; 60(4): 659-676.
17. Pauwels R, Beinsberger J, Collaert B, Theodorakou C, Rogers J, Walker A, Jacobs R. Effective dose range for dental cone beam computed tomography scanners. *European Journal of Radiology* 2015; 84(12): 2581-2592.
18. Rodrigues M, Jacobs R, Bosmans H, Willems G. CBCT in dental medicine: A comprehensive review of guidelines and clinical applications. *Clinical Oral Investigations* 2021; 25(3): 1115-1132.
19. Patel S, Brown J, Pimentel T, Kelly RD, Abella F, Durack C. Cone beam computed tomography in endodontics—a review. *International Endodontic Journal* 2020; 53(11): 1516-1522.