Imaging of mandibular third molars
Dental profession's knowledge, attitudes and opinions

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Background

Panoramic oral radiographs (OPG) has been the standard imaging modality for the presurgical assessment of mandibular third molars (M3Ms).[1] **Recently, there has been a significant increase in the utilisation of dental cone beam computed tomography (CBCT) in Australia**.[2] One of the main uses of CBCT is the pre-operative assessment of M3Ms, due to the creation of three-dimensional images.[3,4] Dentists may perceive that the additional information provided by CBCT reduces the risks of surgical complications when treating M3Ms.[5] Current evidence suggests that CBCT may provide additional information in a small subset of cases to alter surgical plans.[6,7] Evidence does not support the view that CBCT use reduces pain, infections, recovery time or the incidence of neurosensory disturbances of M3M surgery.[5,8,9] One important 'cost' of this technology is a higher radiation dose compared to OPG, compromising the "*as low as diagnostically acceptable*" (ALADA) principle.[1,10]

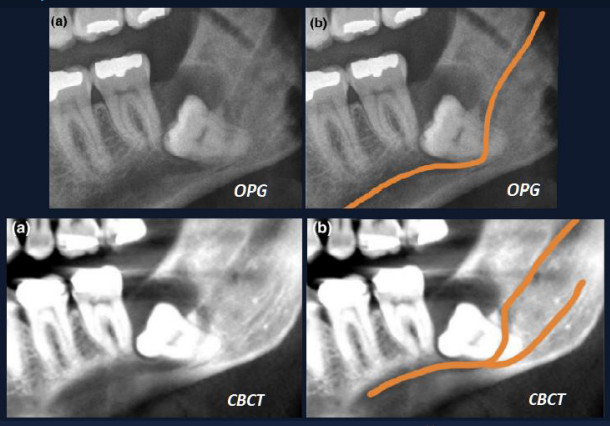


Figure: Information from OPG vs CBCT [11]

Objectives

1) To assess Australian dentists' knowledge, confidence, attitudes, and beliefs regarding the use of OPG and CBCT for the pre-operative assessment of M3Ms.
2) To determine interest in undertaking training in OPG and CBCT for M3M assessment

Methodology

An electronic questionnaire-based cross-sectional study was conducted nationwide in Australia over 8 months in 2023, with ethics approval (*HREC [2022/676]*). Dentists were recruited with the support of the Australian Dental Association (ADA) federal body, all ADA state and territory branches, specialist dental academies, dental societies, public dental services in all states and territories of Australia, online dental forums, dental volunteering group, the Australian Defence Force and the Royal Flying Doctor Service's remote oral health care service.

A QR code and an electronic link were distributed, directing respondents to information about the study and 26 multiple choice questions ***(see QR Code)***

Information regarding respondents' demographics, knowledge, confidence, attitudes, beliefs, and interest in further education in the use of OPG and CBCT for M3Ms assessment were collected.

Scan to view Study Questions

Responses were analysed using IBM SPSS version 28 for Windows 10, statistics include cross tabulation and Pearson chi-squared test.

Results

A total of 595 responses were obtained. This is a representative sample of the 19,089 registered Australian dentists and dental specialists with a **95% confidence interval and margin of error of +/- 4%**.

Demographics of respondents

- Gender: 312 males (52%), 279 females (47%), 4 preferred not to say (1%)
- Private vs Public Practice: 72% private, 27% public, 1% academia
- Years in Practice: 38% 0-10yrs, 28% 11-20yrs, 14% 21-30yrs, 20% 30yrs+
- Urban vs Regional: 74% from urban areas, 26% from regional areas
- General vs Specialist: 80% general dentists, 2% specialty dentists, 18% specialists
- Dental Degree: 82% qualified in Australia or New Zealand, 18% elsewhere

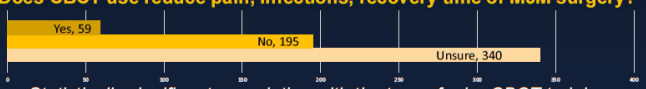
** Demographics are comparable to available Australian Government data*[12] *with slightly more public dentists, and dental specialists respondents.*

Self reported knowledge and confidence of OPG vs CBCT

- Both knowledge and confidence in the use of CBCT was lower than OPG
- Speciality and specialist respondents reported higher knowledge & confidence

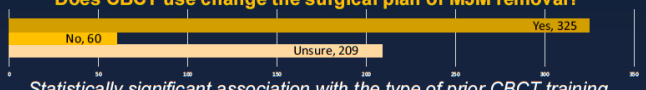
Attitudes and Beliefs regarding pre-surgical imaging of M3Ms

Does CBCT use reduce pain, infections, recovery time of M3M surgery?



Statistically significant association with the type of prior CBCT training

Does CBCT use change the surgical plan of M3M removal?



Statistically significant association with the type of prior CBCT training

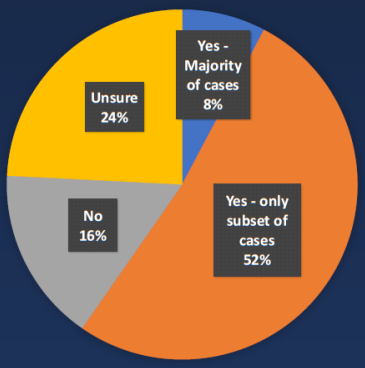
Does CBCT use reduce the incidence of neurosensory disturbance?

No statistically significant association with other responses

Is CBCT use, rather than OPG alone, now the standard of care?

Strong correlation between beliefs that presurgical use of CBCT reduces pain, infection, recovery time, neurosensory disturbance after M3M surgery and CBCT being the "standard of care"

33% of dentists / specialists with onsite CBCT access reported that CBCT use is now the standard of care for the assessment of M3Ms



Interest in further education regarding imaging M3Ms:

- 62% Yes, both OPG & CBCT
- 12% Yes, CBCT only
- 1% Yes, OPG only
- 11% No, I refer to others
- 8% No, I have sufficient training
- 6% No, it does not relate to my practice

Discussion

This was one of the largest studies of its kind in Australia. The Australian dental profession has diverse levels of knowledge, confidence, attitudes and beliefs in the use of CBCT for the evaluation of M3Ms. This may lead to conflicting opinions given to patients in regards to the appropriate use of CBCT, its perceived benefits and the standard of imaging indicated for valid informed consent. Specialty dentists and specialist dentists had higher self-reported levels of knowledge and confidence in using CBCT than general dentists.

Statistically significant association was found between the type of prior CBCT training (*primary dental degree, postgraduate dental degree, courses by CBCT machine vendors, independent CBCT course and self-directed learning*) and respondents' knowledge, confidence, attitudes and beliefs. The type of imaging modality available onsite was also strongly associated with beliefs that CBCT use changes the surgical approach, and that CBCT is now the standard of care. Currently, there is no evidence to support these beliefs.

A third of the respondents (31%) had no CBCT training at all. A majority of respondents (62%) were interested in further education regarding the use of CBCT and OPG for the evaluation of M3Ms. This study demonstrates that training and education has the potential to influence the knowledge, confidence, attitudes and beliefs of dentist and specialist dentists in the imaging of M3Ms in a more evidence-based manner.

Conclusion & Future Perspectives

More than half of the Australian dental profession considered CBCT is only the standard of care for presurgical assessment of M3M for a small subset of M3M cases. A substantial proportion of the Australian dental profession remain unsure as to the clinical benefit of CBCT despite its availability to the profession for many years. A small proportion held attitudes and beliefs which are not well supported by current evidence. The type of CBCT training and courses attended by respondents was statistically associated with certain beliefs and attitudes.

There is merit and interest from the profession in undertaking further education for the appropriate use of OPG and CBCT for the presurgical assessment of M3M. This would support evidence-based practice, in keeping with the ALADA principle and may reduce conflicting opinions given to patients as to the indication and benefit of CBCT for assessment of M3Ms within the profession.

References

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OR
Scan QR Code under methodology section