Dental Radiological Practice in Trinidad and Tobago: A Pilot Project

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ABSTRACT

OBJECTIVE:

The aim of this study was to identify the current standards of radiologic practice in Trinidad and Tobago in relation to international ionizing radiation regulations with respect to dentistry.

MATERIALS AND METHODS:

A 32-point questionnaire that was previously tested was administered to 55 dentists who practice in different regions of Trinidad. The survey aimed to gather information on demographic factors, types of radiographic equipment, techniques and processing and radiation protection measures.

RESULTS:

The majority of dentists (61.8%) were not aware of the technical details of their equipment. Thirty- three dentists did not know the kVp of their machines and 17 dentists were not aware of the intraoral film speed that they utilize. Of the respondents, 85.5% used rounded collimators. The most common technique for periapical radiography was the paralleling technique (64%). Many respondents own panoramic X-ray units, but the majority of them (90.9%) did not take panoramic radiographs on all patients regardless of the dentists working environment. This was proven to be statistically significant ($P<0.05$). All dentists reportedly used some form of radiation protection, but only 8 respondents properly disposed of their radiographic waste by incineration. Lead aprons were utilized by 65.5% of respondents.

CONCLUSION:

The results of this study indicate that current radiological practices utilized by dentists in Trinidad and Tobago need improvement in some areas and there is a dire need for the development of national ionizing radiation guidelines specific to dentistry if best practice is to be maintained.

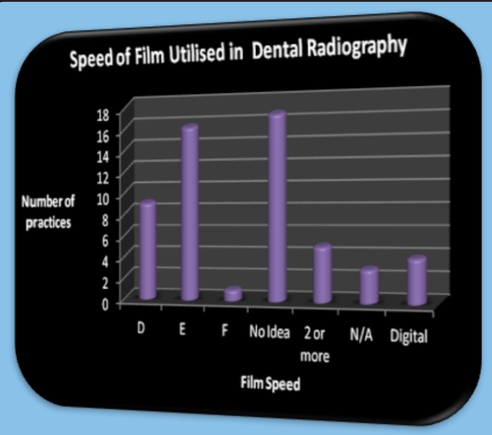
INTRODUCTION

Dental personnel are expected to be aware of various uses, principles and necessary precautions needed to be carried out with respect to radiography. X-rays are a type of electromagnetic radiation that are of high frequency and low wavelength which are characteristics desirable of dental radiographic machines. Thus precautions must be taken to ensure that patients are exposed to minimal amounts of radiation (i.e. the ALARA principle 'As Low As Reasonable Achievable.')

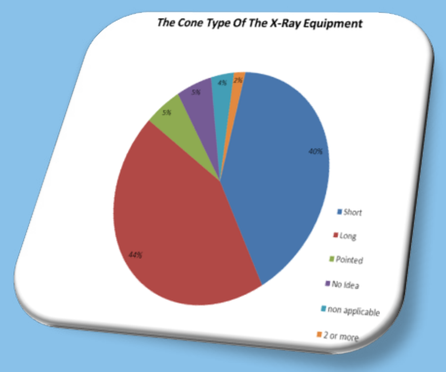
METHODS

After obtaining approval to carry out the research, questionnaires were distributed to dental practitioners of Port of Spain, Southern Trinidad and at the Eric Williams Medical Sciences Complex Dental Hospital/ School. The questionnaire was broken down into the following subcomponents: Demographic factors, Types of radiographic equipment and Radiographic techniques utilized in the Dental Practice and finally safety to both the patient and dental staff of the practice with respect to radiation exposure.

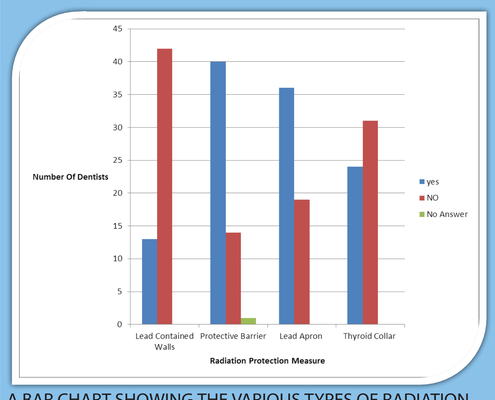
RESULTS



A BAR CHART SHOWING THE FREQUENCY DISTRIBUTION OF FILM SPEEDS UTILIZED BY DENTISTS



A PIE CHART SHOWING THE CONE TYPE USED BY DIFFERENT DENTAL PRACTITIONERS



A BAR CHART SHOWING THE VARIOUS TYPES OF RADIATION PROTECTION UTILISED BY DENTAL PRACTITIONERS

DISCUSSION

After analysis of the results it can be said that there were some practicing dentists in Trinidad and Tobago who lacked the knowledge that they are expected to possess with respect to owning radiographic equipment in an attempt to provide comprehensive dental care to patients. Most dentists had no idea of the film type they used, whilst some used the faster E speed film which minimises radiation exposure to patients.

The collimator restricts the size and shape of the x-ray beam resulting in a reduction of irradiated tissue in the patient by up to 50%. Rectangular collimators are proven to be more effective than rounded collimators since they restrict the beam to the size and shape of the dental film and increases subject contrast by reducing excessive scatter radiation. Unfortunately very few dentists utilised rectangular collimation. The majority of dentists used a long cone rather than a short one. Modern X-ray tube head designs require only a short spacer cone to achieve the same focus to skin distance than a long cone would provide. Thus the length of the cone is no longer significant in modern dental X-ray equipment. Since some respondents had no idea on the type of cone utilised in their practices they need to be educated on the improving technology as it leads towards patient protection. It is imperative that patients, operators and dental assistants be protected from radiation. Radiation protection in buildings can be achieved by having thicker walls or by modifying the walls with lead. There are no justifications for the use of lead protective aprons which are utilised by the majority of dentists in this study as there are theories that they do not protect against radiation scattered within the body. The thyroid collar used to protect one of the most sensitive organs in the body to radiation exposure is another method of protection used by the minority of dentists.

CONCLUSION

This pilot survey of Dental Radiological Practices in Trinidad and Tobago shows that the practices utilized by dentists in this country need improvement. It is suggested that there be periodic continuing education on radiological practices in an attempt to keep the Radiological practices of this country on par with the International guidelines.

REFERENCES

1.Tugnait A, Clerehugh DV, Hirschmann PN. Radiographic equipment and techniques used in general dental practice. A survey of general dental practitioners in England and Wales. J Dent 2003; 31: 197–203.

2. Geist JR, Katz JO. The use of radiation dose-reduction techniques in the practices of dental faculty members. J Dent Educ 2002; 66: 697–701.

3. Bohay RN, Kogon SL, Stephens RG. A survey of radiographic tecniques and equipment used by a sample of general dental practitioners. Oral Surg Oral Med Oral Pathol 1994; 78: 806–810.

4. Svenson B, Petersson A. Questionnaire survey on the use of dental xray film equipment among general practitioners in the Swedish public dental health service. Acta Odontol Scand 1995; 53: 230–235.

5. DentoMaxilloFacial Radiology [Homepage on the internet]. [Updated 5th. July, 2013]. Available from: http://dmfr.birjournals.org

6. Eric Whaites. Essentials of dental radiography and radiology. 3rd Edition. Published 1992

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