

## Knowledge, Attitude And Practice Of Dentists About The Usage Of Panoramic Radiographs In Children- A Questionnaire Study

Research Article

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### Abstract

**Background:** Panoramic radiographs are widely used in pediatric dental practice but they should be prescribed only when there is an expectation that the diagnostic yield will affect patient care. Pediatric patients have a higher risk of undergoing malignant transformation than adults.

**Aim:** This survey was conducted to evaluate the knowledge, attitude and practice of dentists on prescribing panoramic radiographs in children less than 6 years of age.

**Materials and Methods:** Responses were collected from 100 Pediatric Dentists and 100 General Dentists through an electronic questionnaire which consisted of 12 questions.

**Results:** The study revealed that more than 60% of the dentists were unaware of the AAPD guidelines on prescribing panoramic radiographs in children and the most common reason for prescribing an OPG was multiple carious lesions.

**Conclusion:** There is an imperative need for educating the general dentists about the AAPD guidelines and radiation exposure in children and the use of radiation protection equipment should be made mandatory for children and the operating personnel.

**Keywords:** Panoramic Radiography; Children; Intra Oral Radiography; Extra Oral Radiography; Early Childhood Caries; Dental Infections.

### Introduction

Radiographs are valuable aids in the oral health of infants, children, adolescents and persons with special health care needs. They are used to diagnose oral diseases, to monitor dentofacial development and the process of therapy. If an intraoral radiograph shows uncommon structures or findings that cannot be explained by normal anatomy or covered by a single exposure, the examination has to be supplemented by extraoral radiography. Panoramic radiographs are widely used in pediatric dental practice as they offer the ability to capture both maxillary and mandibular teeth as well as surrounding structures and tissues in one image. However, they should be taken only when there is an expectation that the diagnostic yield will affect patient care.

Effects of radiation exposure accumulate over time; every effort must be made to minimize the patient's exposure, especially for younger children. It is widely recognized that pediatric patients must be treated differently to their adult counterparts, partly because infants and children have, on average, a higher risk of undergoing malignant transformation than adults receiving the same dose [1]. Though the radiation dose of exposure is low and the method is more convenient in children, it requires an exposure time of several seconds during which is difficult to keep the children without any movement and also it does not have a fine resolution resulting in low quality of images. According to AAPD guidelines for use of radiographs in children, Panoramic radiography is not indicated in children for general screening purposes. [2]

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No previous research done on usage of panoramic radiographs at the right age in children. Although there are several guidelines and selection criteria relating to dental radiographs, there are currently no specific guidelines pertaining to the use of panoramic radiographs in children and young adults. According to the AAPD guidelines (2012), children with primary dentition; without evidence of disease and with open proximal contacts may not require a radiograph at this time. [3, 4]

This questionnaire study is done to analyse the knowledge and awareness of Pediatric Dentists and General Dentists about the usage of panoramic radiographs in children. Not all dentists are aware that usage of OPG is not indicated in children below 6 years of age.

The aim of this study was to analyse the knowledge and awareness of Dentists about the usage of panoramic radiographs in children less than 6 years of age.

### Materials And Methods

#### Ethical approval

Ethical approval for this survey was obtained from the Institutional Review Board, Saveetha Institute of Medical and Technical Sciences.

#### Study Design

The electronic survey was implemented using google forms and distributed to active Indian Pediatric dentists and General dentists from September 2020 to December 2020. Responses were collected from 100 pediatric dentists and 100 general dentists. The questionnaire comprised of 12 questions in a multiple choice format based on the knowledge, attitude and practice of dentists on the usage of panoramic radiographs in children below 6 years of age. Participation was voluntary and anonymous. The questionnaire was not limited to a particular geographic locality and was circulated among various dentists and private practitioners in

India. Care was taken to verify the responses on the same day to ensure that all entries are verified and no entry goes unchecked.

### Statistical Analysis

Data was collected and tabulated in google sheets and was verified by an external examiner. The power was calculated at a 95% confidence interval and the results were statistically analyzed using IBM SPSS software. (SPSS Inc., Chicago, IL, USA) version 20.0. The correct answers were tested based on the responses for each question given by general dentists and pediatric dentists using Chi square tests.

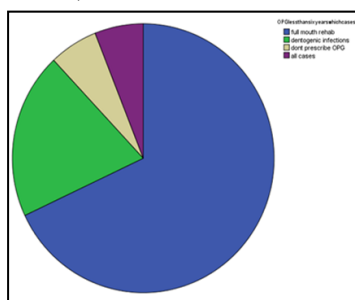
### Results

In this study responses were collected from 100 active General Dentists and 100 active Pediatric Dentists. Most common reason for prescribing OPG in children was found to be multiple caries involvement based on the responses collected. (Fig 1). Pediatric dentists were more aware of the AAPD guidelines on prescribing panoramic radiographs in children than General dentists (63.6% of dentists were unaware of the AAPD guidelines) (Fig 2). Also, it was found that 72.3% of general dentists prefer to prescribe an OPG instead of multiple intraoral radiographs for children below 6 years of age (Fig 3).

### Discussion

Panoramic radiographs may have the advantage of reduced radiation dose and imaging of a larger area but intraoral radiographs are more accurate than panoramic radiographs in evaluating dentoalveolar trauma, root shape, pulpal pathosis and root resorption. Most of the dentists are unaware that usage of panoramic radiographs are not indicated in children below 6 years of age unless absolutely necessary. According to the AAPD guidelines (2012) children with primary dentition; without evidence of disease and with open proximal contacts may not require a radiograph at this time.[4]

**Figure 1. Pie chart representing the reasons for prescribing OPG's in children, where full mouth rehabilitation (multiple carious lesions) was the most common response.**



**Figure 2. Pie chart representing awareness about AAPD guidelines, most of the dentists seem to be unaware of the guidelines for prescribing OPG's in children.**

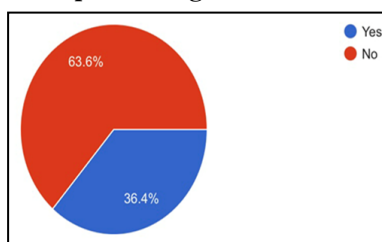


Figure 3. Bar graph representing radiograph of choice by general dentists and pediatric dentists for uncooperative children below 6 years; general dentists prefer OPG for children than intraoral radiographs.

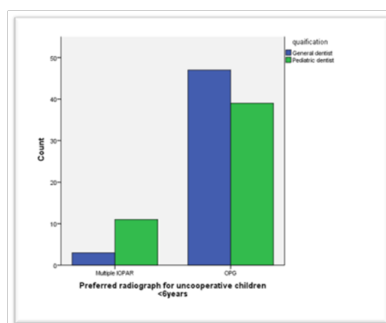


Table 1. Cross Tabulation of responses given by General dentists and Pediatric dentists with p value.

Questions	General Dentist	Pediatric Dentist	P value
Preferred radiograph for children below 6 years with less than three carious teeth?	OPG	Multiple IOPAR	0
Preferred radiograph for children below 6 years with more than three carious teeth?	OPG	OPG	0
Which radiograph has highest amount of radiation exposure?	OPG	Multiple IOPAR	0.029
Extent of caries can be detected in which radiograph?	IOPAR	IOPAR	0.011
Most common reason for prescribing OPG in children?	Early Childhood Caries	Early Childhood Caries	0
Type of radiograph prescribed for recall patients with clinical caries or increased risk of caries?	IOPAR	IOPAR	0
For uncooperative or anxious children below 6 years of age, which radiograph is prescribed	OPG	OPG	0
For uncooperative or anxious children above 6 years of age, which radiograph is prescribed	OPG	OPG	0

Panoramic radiographs are not the radiograph of choice for diagnosing acute infections but in certain cases where it is required to decide the treatment plan, radiation protection equipment should be used as infants and children have, on average, a higher risk of undergoing malignant transformation than adults receiving the same dose.[5, 6]

According to the EAPD guidelines [1] an OPG should be supplemented to an intraoral radiographic examination only if the intraoral radiograph reveals uncommon structures or findings that cannot be explained by normal anatomy. Justification of radiographic examinations in children and young adults is of importance as they are more radiosensitive than adults. A systematic review was done [7] on the relative indications and contraindications for prescribing panoramic radiographs in pediatric patients; they concluded that panoramic examination may be useful in evaluation of craniofacial trauma and diagnosing pathological conditions but it is not recommended for caries diagnosis and should not be prescribed on a regular basis in children with primary dentition. [3]

The main purpose of this survey was the need for making general dentists and pediatric dentists aware of the AAPD guidelines for prescribing radiographs in children and to highlight that radiographic examination in children below 6 years is not required unless absolutely necessary.

**Conclusion**

General Dentists should be made aware of the radiation exposure and should minimise the use of taking radiographs in children less than 6 years unless absolutely necessary.

Pediatric Dentists should mandate the use of radiation protection equipment for the children and the operating personnel.

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