

## Original Research

### Knowledge, attitude and practice of dentists about radiation protection in Jammu

Sandeep Kaur<sup>1</sup>, Abhishek Sinha<sup>2</sup>, Meenu Sangral<sup>3</sup>

<sup>1</sup>Lecturer, Deptt of Oral Medicine & Radiology, Indira Gandhi Govt dental College & Hospital, Jammu, J&K;

<sup>2</sup>Assistant Professor, Department of Dentistry, Patna Medical College, Patna, Bihar;

<sup>3</sup>BDS MPH, Research Assistant, CCM, AIIMS, New Delhi;

#### ABSTRACT:

**Introduction:** The effect of radiation on living organisms is very negative and range of these effects may vary depending on the dose and the duration of exposure. **Aim and objectives:** A questionnaire study was designed to gain insight into the knowledge, attitude and practice of dentists in Jammu towards quality care and radiation protection. **Materials and methods:** A questionnaire study was carried out among 150 dentists in Jammu. A specially prepared structured questionnaire was used to assess the attitude and awareness about radiation protection among dentists in Jammu. **Results:** It was observed that 63.4 % of the dentists came across patients who questioned about their personal radiation safety. A less percentage of the dentists (23.8%) used lead aprons and thyroid collars to cover their patients during radiographic examination while 76.2% did not. Only 32.3% of the dentists used lead apron and thyroid collars to protect them during the radiographic examination neglecting their own protection. **Conclusions:** The current study emphasizes on the need for further implementation of radiation protection principles among dentists in Jammu.

**Key words:** radiation protection, dentists, dental radiographs.

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**Corresponding author:** Dr Sandeep Kaur BDS MDS, Lecturer, Deptt of Oral Medicine & Radiology, Indira Gandhi Govt Dental College & Hospital, Jammu, J&K

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#### INTRODUCTION

The effect of radiation on living organisms is very negative and range of these effects may vary depending on the dose and the duration of exposure<sup>1</sup>. Many medical or dental procedures are totally dependent on radiological tools such as radiography, fluoroscopy and Computed Tomography (CT). All these procedures utilize ionizing radiation. Therefore, it is better to use the minimum possible dose to achieve the optimum quality image of radiological imaging<sup>2-4</sup>. The international authorities such as International Council of Radiation Protection (ICRP) and national authorities such as National Council of Radiation Protection (NCRP) in India issues guidelines about the limits of radiation doses and ways to minimize radiation exposure. However, the dose limits permitted by international authorities often exceed<sup>5,6</sup>. Therefore, it is extremely important to consider the safety of patients as well as the medical

professionals performing the procedure by balancing the risk to radiation exposure. During the course of medical or dental training, most of the health-care personnel are trained regarding radiation hazards and requisite safety measures. It has been observed that the awareness of radiation hazards among clinicians can be improved by improving their knowledge and awareness during medical studies<sup>7,8</sup>. The dentist needs to be aware of radiation protection measures and the radiation dosage received daily to protect themselves and their patients from the harmful effects of radiation. Therefore, a questionnaire study was designed to gain insight into the knowledge, attitude and practice of dentists in Jammu towards quality care and radiation protection.

#### MATERIALS AND METHODS

A questionnaire study was carried out among 150 dentists in Jammu. A specially prepared structured

questionnaire was used to assess the attitude and awareness about radiation protection among dentists in Jammu. The participants were randomly selected to obtain an even geographical distribution throughout the Jammu, India. The questionnaires could be returned by mail or in-person. The dentists were informed about the anonymous processing of the questionnaires. A total of 15 questions were included. Statistical analysis was performed using Pearson correlation coefficient test to know the validity of the questionnaire and any  $P \leq 0.05$  was considered statistically significant.

**RESULTS**

Of all the 150 dentists enrolled in the study, 92.8 % considered clinical examination and patient’s history necessary before prescribing dental radiographs. It was observed that 63.4 % of the dentists came across patients who questioned about their personal radiation safety [Table 1]. Almost 56.7 % of the dentists explained to the patient about radiation risks/benefits before the radiographic exposure, ensuring complete understanding of the property of X-rays to the patient [Table 2]. However, majority of the dentists (65.9%) failed to acquire informed consent of the patient before prescribing dental radiograph. A less percentage of the dentists (23.8%) used lead aprons and thyroid collars to cover their patients during radiographic examination while 76.2% did not. Only 32.3% of the dentists used lead apron and thyroid collars to protect them during the radiographic examination neglecting their own protection. A majority of the participants (54.7%) calibrated their X-ray machines every year.

	Number	Percentage
Yes	95	63.4
No	55	36.6
Total	150	100

	Number	Percentage
Yes	85	56.7
No	65	43.3
Total	150	100

**DISCUSSION**

In our present study, 92.8 % of the dentists considered clinical examination and patient’s history necessary before acquiring radiograph. Majority of the patients were already aware of the radiation hazards. Hence, 63.4 % of the dentists came across the patients who questioned them about radiation safety. 56.7 % of the dentists had no experience explaining radiation risk/benefit to patients. Dentists should explain the treatment plan to the patient. Patients should be informed of possible untoward results of the treatment benefit, informed consent, comparison with the other

study could not be done. American Dental Association (ADA) strongly recommends leaded thyroid collars and lead aprons. Although scatter radiation to the patient’s abdomen is extremely low, leaded aprons should be used to minimize patient’s exposure to radiation. In our study, only 23.8% of the dentists used lead aprons and thyroid collars to protect their patients during radiographic examination which is similar to the results of the study conducted in Coorg, India<sup>9</sup> with 40% of the dentists wearing lead apron and in Lucknow<sup>10</sup> with 38.6% of dentist using lead apron. Approximately 76.2% of the dentists did not use lead aprons and thyroid collars which are in agreement with the results of a study<sup>11</sup> who reported that 88% did not wear a lead apron. In the present study, 32.3% of the dentists wore lead apron and thyroid collars during the radiographic examination, and about 64.7 % of dentists stood behind the lead shield. Similar studies were conducted in Coorg district, Karnataka, India<sup>9</sup> where 43.8% of dentists stood behind lead shield. Another study was carried out in Belgium<sup>12</sup> and Turkey<sup>13</sup> where only 8% and 11.2% of the dentists, respectively, stood behind lead shield contradicting the findings of our study. Education of dentists in this aspect is deemed essential. The X-ray machine must be controlled periodically for following the set regulations. In our study, 54.7% of the dentists got their X-ray machines calibrated periodically, which is not in agreement with the findings of study carried out in Turkey<sup>13</sup> and Greater Noida<sup>14</sup> where only 16.7% and 19% of the dentists, respectively, reported that their X-ray units had been serviced routinely.

**CONCLUSIONS**

The current study emphasizes on the need for further implementation of radiation protection principles among dentists in Jammu. Hence, practitioners should be aware of the possible hazards involved with use of X-rays and should strive hard to implement the various protective measures into practice.

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