



QUESTIONNAIRE STUDY ON AWARENESS OF RADIATION SAFETY AND PROTECTION AMONG DENTISTS

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ABSTRACT

Dental radiographs have long been the standard method for detecting oral illness. The harmful effects of radiation produced by dental radiographs is very low but still continuous exposure to radiation will cause harm to human health. This study aim is to estimate the awareness of radiation safety and protection in dental practice. **Material and method** - A questionnaire with ten questions was prepared and circulated to 100 dentists from different parts of India. Responses were gathered, and an appraisal was made as a result. **Result**- A total of 100 dentists responded enthusiastically and took part in it. Most of the dentists were aware of harmful effects of dental x-ray and its radiation physics and biology. Many of them are not using personal monitoring device for measuring radiation exposure. **Conclusion:** Radiation security expertise and experience was insufficient. While many participants had strong knowledge of radiation safety, risks, and defense, some fall into the average knowledge group, according to this study. In spite of having knowledge of harmful effects of radiation, many dentists have not used any safety protection and have not followed safety protocols. To avoid the risks in future more awareness programs have to be conducted about radiation safety and protection

KEYWORDS : Radiation safety, protection, Awareness, Dentists

INTRODUCTION-

Directly or indirectly ionizing radiation causes biological harm, through the generation of free radicals. It causes destruction into single or double strand breaks and cross-links.¹

In human body, Stochastic and deterministic effects are two types of biochemical effects. Both induce DNA damage by sub lethal radiation and proportionate to the dose.²

While radiological investigations are the first line of defense in most oral and maxillofacial disorders, their negative consequences must not be overlooked. In certain situations, easy access, overuse without sufficient education, and a lack of reinforcement of radiation risks information have resulted in the unwitting disregard of the as low as reasonably achievable (ALARA) principles.^{3,4}

The questionnaire was created to estimate the awareness of radiation protection and its safety among dentists.

MATERIALS AND METHOD-

Materials and methods:- Overall 100 dentists from different parts of India were enrolled in this study. The sample included all dentists, both BDS and MDS.

Questionnaire: A ten-question questionnaire was planned ahead of time. The demographic information was gathered prior to the start of the questionnaire. Response was collected and transferred to excel sheet for assessment. All data assessment done as percentage.

RESULT

Dentists from all over India were chosen for this study. A total of 100 dentists reacted enthusiastically to the report and took part in it. This study response stated that according to Qualifications 53% of them were MDS and 47% of them were BDS (fig. 1) out of which 46% were male and 54% were female (Fig. 2). Participant's experience was also recorded which shows 1-5 years (40%), 6- 10 years (20%), 11 & above years (15%) and freshers (25%) (Fig. 3).

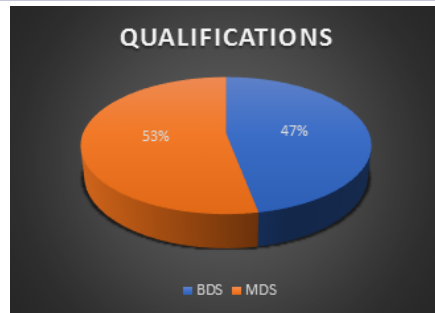


Fig.1. Qualification Of Participants

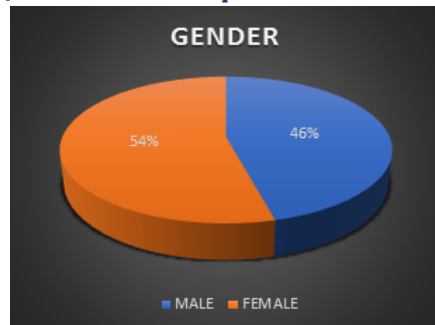


FIG.2. GENDER OF PARTICIPANTS

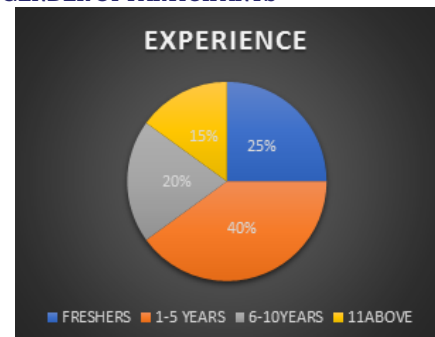


FIG.3. EXPERIENCE OF PARTICIPANTS

In our study many dentists (94%) have responded that they are aware of harmful effects of Dental x ray, Maximum participant's (75%) were aware of radiation physics and biology, For the application of ALARA principle while taking radiograph 69% participants agreed that they have applied ALARA principle while taking radiograph, about pregnancy and radiation 41% participant has responded yes, 29% has responded no and 30 were not sure that dental radiograph is totally contraindicated in pregnancy. About 60% has used lead apron and thyroid collar while taking radiograph. In our study 83% participants were not using personal monitoring device to measure radiation doses and 60% of participants has responded that they stood behind their protective screen while taking radiograph, 52% responded using of film holding device while taking radiograph. About 72% participants had responded correctly for distance to stand while taking dental radiographs. About 61% participant advised radiograph more than 50 numbers in a week.

DISCUSSION

Many experiments aimed at measuring radiation exposure a few years ago found an increase in cancer, miscarriage, fetal mutagenic modifications, cataracts, and life expectancy shortening. About the fact that the preceding sentence is indefinite and irrelevant to diagnostic dental radiography, the stochastic biological hazards effect can still be used.⁵

In our study 80% considered X-ray is harmful whereas according to Baser et al., 2019, 63.5% and according to Swapna et al., 59% considered dental X-rays were harmful. According to Aravind, et al., 84.3% and Baser et al., 2019, 58.1% were aware of ALARA principle. However, in this study 69% participants are aware of it.^{6,7,8}

In this study 41% has answered that it is totally contraindicated to take dental radiograph to pregnant patients which is almost nearing to study conducted by Basheer et al. (36.8%).⁸

In our study 60% wear lead apron and thyroid collar while taking radiograph. Wearing lead apron and thyroid collar will minimise the radiation exposure to patient and it is highly recommended. Whereas, according to Rahman et al., 84.61% responded positively and study by R. Jacobs et al., has reported very minimal (12%) responded positively.^{9,10}

In our study 83% participants were not using personal monitoring device to measure radiation doses But, according to Asha et al., which shows 96% of them never used dosimeter to measure the radiation.

According to Asha et al., 43.8% and Nagaraj et al., 76% of participants agreed that they stood behind a protective screen/concrete wall while taking radiograph. Whereas, in this study, 60% participants responded that agreed they stood behind the screen while taking radiograph and 52% participants responded that they used film holding device while taking radiograph which is almost similar to studies conducted previously.^{11,12,13}

In this study 72% participant wear aware of ideal distance of operator to stand while taking radiograph. Studies reported that many dentists were completely not sure for position distance rule which to be followed in case of lack of barrier.¹⁴

In this study 61% participants had advised radiograph more than 50 per week which shows that radiograph has become almost mandatory for diagnosis. The use of dental radiography for accurate diagnosis and recovery preparation has risen dramatically in recent years. However, both the patient and the operator are at risks of unnecessary exposure.

CONCLUSION

While many participants had strong knowledge on radiation

safety and protection, majority of them fall into the average knowledge group, according to this study. Many dentists are advising radiograph for diagnosis which shows that radiograph has become mandatory. So, more awareness programs should be conducted to avoid radiation hazards. For better future and accurate result more research need to be done.

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Conflicts of interest

Nil.

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