*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*
*e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 5 Ver. II (May. 2017), PP 79-82*
*www.iosrjournals.org*

# An Evaluation of Dental Radiologic Practices among Dental Practitioners in Pondicherry

Sajani Ramachandran[1], M Manikandan[2]
[1]*Professor,Department of Dentistry,Pondicherry Institute Of Medical Sciences*
[2]*Assistant Professor And Statistician,*
*Department of Community Medicine, Pondicherry Institute Of Medical Sciences.*

***Abstract***
***Aims and objectives:*** *To evaluate the awareness of occupational hazards among dental practitioners in and around Pondicherry and also to evaluate the dental radiography related practices in their clinics.*
***Material and methods****: A self administered pretested and validated questionnaire was used to collect the data from the practising dentists .82 dentists responded of which 71 was included in the study as the rest of them fell into the exclusion criteria.*
***Results****: The awareness of occupational hazards was 98.6%. Work related stress and posture were considered to be the most common cause affecting the well being. 90.1% of dentists had x ray units in their clinics. Use of digital and conventional films were almost equal. Majority of the radiographs were taken by the dentists themselves (60.6%). 74.6% used 0-5 exposures a day. 62% of practitioners used no protective measures against radiation exposure .*
***Conclusion****: Knowledge and awareness about the probable risks the dentists are exposed to ,in their day today practice should help them take adequate precautions while in practice .*
***Keywords:*** *dentists, occupational hazards, dental radiographs, radiation exposure.*

## I. Introduction

Dental practice involves various procedures which require precision, working for long hours in uncomfortable positions, exposure to various dental materials, radiation exposure when taking dental radiographs and also work related stress. All these factors may affect the health of the dentists and can take a toll on their well being in the long run. It is imperative for the dentists to be aware of the occupation related problems they might have in future so that they can take adequate precautions. One of the most commonly used diagnostic aid in dentistry is radiographs. Clinical examination often need to be supplemented with radiographs in order to make correct clinical diagnosis as well as treatment planning and also for follow up. In spite of many technologic advances radiation exposure still exists with the use of dental radiographs. Moreover regular and multiple exposures can have a cumulative effect and can pose a health hazard. Digital radiography is in practice since 1988 with radio visio graphy and now digital radiographs are used in many clinics in urban areas though the conventional x ray films are used by majority of the practitioners otherwise. The digital radiography in addition to having lesser radiation exposure helps in efficient communication as well as reduce the use of many chemicals used for development of x ray films. Studies have shown that though the radiation exposure is minimal from dental x rays ,it may run the risk for thyroid cancer [1].The dentist have to be aware of the risks they are exposed to in their practice and should protect themselves from any untoward health problems in future. This study is an attempt to collect the dental radiography related practices followed by dentists in and around Pondicherry.

## II. Aims And Objectives

To evaluate the awareness of the dentists in and around Pondicherry about the occupational hazards they are exposed to in their practice and to study the dental radiography related practices followed by them in their clinics.

## III. Materials And Methods

A self administered pretested and validated questionnaire was used to collect the data. A pilot study was done by administering the questionnaire to 10 dentists and they were asked to comment about the comprehensibility, adequacy and relevance of the questions and accordingly the questionnaire was modified . A convenient sampling was done and the questionnaire was send to 90 dentists in and around Pondicherry.
Demographic details as well as practice details were collected. The exclusion criteria was the dentists who had less than one year of experience and those not willing to participate. Informed consent was obtained from the

participants.82 dentists responded of which 11 were not included as they had less than one year of experience. The data obtained was statistically analysed using SPSS ver .20 to determine the mean and proportion.

## IV. Results

The details collected include the demographic details ,practice details as well as the radiographic practices followed by the dentists. Maximum respondents were in the age group 25-35 which was 62% (44). Males were 52.1% and females were 47.9%. Married people were 71.8%.(Table 1).Work related posture is the most important factor that affected the well being of the dentists was the opinion of 78.87% of the respondents. Work related stress was the next cause suggested (67.6%) followed by working hours(36.61%) and finances (32.39%) .The other factors included working environment, problematic patients and personal or family problems Table 2. The maximum response was from those who have been practising for less than 5 years (40.8%) followed by 5-10 years (25.4%). 63.4% respondents practised for 6-12 hours followed by 35.2% who practised for 3-6 hours (Table3).The number of people using x ray films and digital imaging was almost equal 28.2% and 32.45 % respectively.25.4% of people used both digital and x ray films where as 14.1% dentists preferred to refer elsewhere for radiographs. Maximum number of dentists took the radiographs themselves (60.6%).22.5% asked their assistants to take the radiographs.74.6% of dentists used 0-5 radiographs on an average a day 15.5% of the dentists took 5-10 x rays a day and 5.6% took more than 15 radiographs a day. 62% of the dentists used no protection against radiation exposure.23.9% used only lead apron (table 4).

## V. Discussion

Dental radiography is an unavoidable diagnostic tool in dental practice. In order to reduce the health hazards adequate precautions need to be taken in using them. Exposing to irreversible radiation may lead to irreversible side effects such as mal function in cellular pathway like mutation, growth and cellular division and genetic change[1].Dental radiography which is a low source of radiation has often been overlooked as a radiation hazard to thyroid gland and an increased risk for thyroid cancer [2]. This study showed that 62% (n=71) used no protection against the radiation exposure. The percentage of dentists who used only lead apron was 23.9%.Thyroid collar and dosimeter alone were used by 1.4%.Study done by BS Aravind et al showed that 11.7%(n=300) followed all the necessary safety measures .6.7% were not using any protective measures .During the course of learning all the dental students must be trained for using the safety measures while taking dental radiographs [3].Majority of dentists did not practice radiation protection measures which is required to minimise exposure to unnecessary radiations for patients and for dental professionals according to a study by Byung-Do et al [4].Radiographs are often used to supplement clinical examination. Technical advancements have significantly reduced the radiation dose to patients and technicians or dentists during intra oral and extra oral radiographic procedures [5].In a study by Swarna et al the dentists are exposed to 20-40 intra oral x rays every month on an average.55% of dentists reported usage of film holders 13 % dentist held the films with their fingers while radiographs were being taken.70.8% dental practitioners didn't have lead aprons .84.7%practitioners who had aprons did not use them .54.5% of female dentists used film badges for monitoring radiation exposure .In the present study74.6 % used 0-5 numbers of exposures .With so many radiographs being taken it is very risky not to use protective measures. Digital imaging for intra oral radiograph requires about half the exposure of E speed films . The rate of digital radiograph use was 14 % .In the present study the use of digital radiograph as well as the use of x ray films were almost similar. Study by D Iigy et al showed that 82.5%(n=630) took radiographs by themselves [7].Where as in our study 60.6 % of dentists took the x rays themselves .For minimising any unnecessary radiations attempt should be made to improve the knowledge about radiation dose ,technology as well as the various safety measures [8].

## Tables

**Table 1:** Demographic details of the respondents

| **Characteristic** | | **N(71)** | **Percentage** |
|---|---|---|---|
| **Age group** | 25-35 | 44 | 62 |
| | 35-40 | 19 | 26.8 |
| | 40-45 | 06 | 8.5 |
| | 45-50 | 2 | 2.8 |
| **Gender** | Female | 34 | 47.9 |
| | Male | 37 | 52.1 |
| **Marital status** | Divorced/separated | 04 | 5.6 |
| | Married | 51 | 71.8 |
| | Umarried | 16 | 22.5 |

**Table 2:** Opinion of dentists about the factors affecting their well being

| **Factors that might affect the well being** | **n** | **%** |
|---|---|---|
| Work related stress | 48(n=71) | 67.6 |
| Work related postures | 56(n=71) | 78.87 |
| Working enviornment | 20(n=71) | 28.16 |
| Working hours | 26(n=71) | 36.61 |
| Problematic patients | 18(n=71) | 25.35 |
| finances | 23(n=71) | 32.39 |
| Family/personal problems | 8(n=71) | 11.26 |
| Not sure | 1(n=71) | 1.40 |

**Table 3:** Practice related information of the respondents

| **Number of years in practice** | N (71) | % |
|---|---|---|
| Less than 5 years | 29 | 40.8 |
| 5-10 years | 18 | 25.4 |
| 10-15 years | 13 | 18.3 |
| 15-25 years | 11 | 15.5 |
| **Practising hours per day** | | |
| 3-6 hours | 25 | 35.2 |
| 6-12hours | 45 | 63.4 |
| More than 12 | 1 | 1.4 |

**Table 4:** Dental radiography related practices followed by the dentists

| **Type Of Radiography Practised** | **N(71)** | **%** |
|---|---|---|
| Film/Analog | 20 | 28.2 |
| Digital | 23 | 32.4 |
| Both | 18 | 25.4 |
| Prefer To Refer For Radiographs | 10 | 14.1 |
| **Person Who Takes The Radiograph** | | |
| Self | 43 | 60.6 |
| Junior Colleague | 2 | 2.8 |
| Assistant | 16 | 22.5 |
| Anyone | 10 | 14.1 |
| **Number Of Exposures On A Day** | | |
| 0-5 | 53 | 74.6 |
| 5-10 | 11 | 15.5 |
| 10-15 | 3 | 4.2 |
| More Than 15 | 4 | 5.6 |
| **Protective Measures Used** | | |
| Only Lead Apron | 17 | 23.9 |
| Thyroid Collar | 1 | 1.4 |
| Dosimeter | 1 | 1.4 |
| Lead Apron And Thyroid Collar | 3 | 4.2 |
| Lead Apron ,Thyroid Collar And Dosimeter | 2 | 2.8 |
| Lead Apron And Dosimeter | 3 | 4.2 |
| No Protection | 44 | 62 |

## VI. Conclusion

Dental radiographs being an absolute necessity in the diagnosis of dental problems , it s usage can't be avoided. Since continuous exposure to radiation can have cumulative effect and cause health hazards ,the dentists have to take adequate precautions while using dental radiography. The importance of this should be emphasised in the dental curriculum and dentists should be updated about the various latest technologic advances and try and incorporate them in their practice so that if possible their well being is maintained for long

## Acknowledgements

1. Dr Sibu Simon Associate Professor ,Department of Dental Surgery,CMCH Vellore

## References

[1]. Fatemeh Ezoddini , Vahid Serrayesh. Knowledge of correct prescription of radiograph among dentists in Yazd ,Iran. J Dent Rest Clin Persp. 2008.2(3), 95-98.
[2]. Memon A, Godward S Williams, D Siddique, Al Seleh. Dental xrays and the risk of thyroid cancer –a case control study. Acta Oncol.2010,49(4);447-53.
[3]. B S Aravind,E Tatu Joy,K Shashi,J Augene,S Sajesh,R Dhas. Attitude and awareness of general dental practitioners toward radiation hazard and safety. J Pharm Bioallied Sci.2016,10(8);553-58.
[4]. Byung-Do Lee, Jon B Lendlow. Attitude of Korean dentists towards radiation safety and selection criteria. Imaging Sci in Dentistry. 2013.43;179-84.

[5]. Soheyl Sheikh, S lingappa, Pallagatti, I Singh, R Gupta, A Aggarwal, R Singh, D Gupta. Survey of dental radiographical practice in states of Punjab and Haryana in India. J Investigative and Clin Dent.2014.5;1,72-77.
[6]. Swarna, Y Bairapura, G Devarasa, A Rajeswari, D Kalra. Compliance of Indian dentists with oral radiology safety measures..J of Oral Max radio.2013.1, 3;104-110.
[7]. D Iiguy, M Iiguy, S Dincer, G bayrli. Survey of dental radiological practice in Turkey. Dent Maxillofacialradio.2006.34,222-227.
[8]. Hagnanifae, E Moudi, F Abesi, BijaniKazem. A Study of dentists knowledge about dental radiology principles. J Babol Univ Med Sci.2007.17,9;34-38.