KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS RADIATION PROTECTION AMONG DENTAL STUDENTS, HOUSE OFFICERS AND POSTGRADUATE RESIDENTS OF ISLAMABAD DENTAL HOSPITAL

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ABSTRACT

Objective: *The objective of the study was to determine the knowledge, Attitude and Practice towards radiation protection among dental students, house officers and postgraduate of Islamabad dental Hospital.*

Materials and methods: *This questionnaire based Cross-sectional study was conducted in Islamabad dental hospital on 3rd year, final year BDS students, House officers, and Post Graduates residents. A pretested questionnaire was selected after making necessary corrections. Approval from Institution review Board (IRB) was taken for this study. Study questionnaires were distributed among the participants. The questionnaire included 13 questions. The questionnaire was divided into two sections A& B. The section A included demographic details, all questions in section B were closed ended. It included knowledge base (question 1 to 5) and attitude and practice based questions (6 to 13). Participants were assured about the confidentiality of their names. Data was entered and analyzed using SPSS 22.*

Results: *About 173 questionnaires were distributed among the participant and all questionnaires were returned and analyzed. Among 173 participants, 129 (74.5%) were females and 44 (25.5%) were males. 53 out of173 were third year students (30.6%), 50 were final year students (28.9%), 43 were house officers (24.8%) and 27 were post graduates (15.6%)*

Conclusion: *Majority of dental students, house officers and postgraduate residents have good knowledge and attitude towards radiation protection but need to increase its awareness by arranging lectures, seminars and workshops.*

Key words: *Knowledge, Attitude, Practice, Radiation, Radiation protection.*

INTRODUCTION

The emission of energy in the form of waves across matter's space is known as radiation. An X-ray is a form of ionizing radiation with enough energy to remove an atom's orbital electron. [1] The use and frequency of x-rays in the dental field is well established, so the ALARA principle (as low as reasonably achievable) is more important in dental radiological practice, where the exposure time should be minimized, the distance between the body and the radiation source should be doubled, and barriers should be used. [2]

Although dental x-rays are advantageous to both patients and dentists, they do have certain negative

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side effects, such as thyroid cancer, intracranial meningioma, and salivary gland tumors. Patients and dentists are both susceptible to stochastic influences. [3]

According to the American Dental Association and European recommendations for the rationale and effective use of dental x-rays, a radiograph should only be taken if it offers new information to aid in the management of the patient. It should only be done after a thorough history and clinical evaluation. The dentist should give the practitioner in charge of x-ray exposure enough information to complete the justification process. [4] For an adult mandibular molar, the National radiology protection board (Hospital Lane, Cookridge) recommends a reference dose of 4mGy (patient entrance dose) and 65 mGy mm (dose width product) for a typical adult OPD. Dentists might use these doses as a reference for clinical practice. [5]

Previous research has found a lack of understanding about ionizing radiation and the use of imaging equipment among medical students, doctors, paramedics, and dentists. [6] As a result, there is a need to examine dentistry students' knowledge, attitude, and practice (KAP) of dental imaging and proper radiation protection. According to studies, primary care practitioners are uninformed of the risks linked with radiation use. Physicians in charge of requesting radiological examinations have a tendency to underestimate the real doses involved, have a poor understanding of the potential risks to community health, and do not address the potential concerns of CT scans with their patients. The KAP survey, conducted in January 2017 in Bihar, India, found a low to average outcome in terms of radiation biology and protection among undergraduates and graduates. [7]

Dental students and interns are required to work in clinics or dental settings, and they are constantly exposed to radiation. Dental radiation is modest, but the long-term effects are substantial, thus dental professionals must be well-versed in radiographic safety. [8]

MATERIALS AND METHODS

This questionnaire based Cross-sectional study was conducted over period of 3 months from first September-30th November 2020 in Islamabad dental hospital on 3rd year, final year BDS students, House officers, and Post Graduates residents. All the students of 3rd, final year of BDS course and house officers of academic calendar 2020-21, and all the post graduate students of clinical sciences of the institution were included on voluntarily basis. Total participants of the study were 173. Purposive Convenience sampling technique was used for the study.

A pretested questionnaire [9] was selected and some changes were made by panel of experts of institution after testing validity and reliability of the questionnaire by doing a pilot survey. The results of the pilot study were entered and analyzed by SPSS version 22.0 (SPSS Inc. Chicago, IL, USA). The Cronbach's alpha was 0.74.

The questionnaire included 13 questions. The questionnaire was divided into two sections A& B. The section A included demographic details, all questions in section B were closed ended. It included knowledge base (question 1 to 5) and attitude and practice based questions (6 to 13). Approval from Institution review Board (IRB) was taken for this study. Study questionnaires were distributed among 3rd year, final year students, house officers and post graduates students. The purpose of study was described and instructions to fill in the questionnaires were given. Informed Written consent was taken from participants prior to attempt and they were assured about the confidentiality of their names. The data were collected by using a hard copy of questionnaire. The questionnaires were distributed among willing undergraduate students (third year students, final year BDS), house officers and post graduate students of clinical sciences. Data was entered and analyzed using SPSS version22 (SPSS Inc. Chicago, IL, USA). The descriptive measures for the quantitative and qualitative variable were reported. The frequency and percentage was calculated for knowledge, attitude and practice based questions. The cross table and chart was constructed to compare the results of different groups. The response of knowledge component was scored as 1 for correct answer and zero for incorrect answers. So the total score of knowledge questions was 5 and percentages of correct answers reflected the quality of knowledge given under mentioned table.

RESULTS

The study included a total of 173 participants. The mean age of the participants was 23.38$\pm$2.436 with the range from 20 to 31. Gender distribution

>90% correct answers	Excellent
50 to 90% correct answers	Good
<50% correct answers	Poor

showed slight predominance of female 74.6% (129) as compared to male 25.4% (44). Out of173 participants, there were 543(30.6%) third year students, 50 (38.9%) final year students, 43(24.8%) house officers (24.8%) and 27(15.6%) post graduates residents. The responses of different groups are shown in the following table 1.

The response to knowledge component of the questionnaire showed better response in house officers and postgraduate residents as shown in figure 1.

DISCUSSION

It is important to increase awareness about radiographic protection among students, house officers

Table No 1: Response of 3rd year, final year, house officers and PGs

Questions	Answer	3rd year	4th year	HO's	PG's	Total
Knowledge						
1. Dental Rays are reflected from the walls of the room?	Yes	33	28	21	11	93(53.7%)
	No	20	16	19	13	68(39.3%)
	Don't Know	0	6	3	3	12(6.9%)
2. Can you recognize the radiation hazard symbol?	Yes	49	45	40	27	161(93.06%)
	No	3	4	3	0	10(0.0005%)
	Don't Know	1	1	0	0	2(1.15%)
3. Do you know about the ALARA principle?	Yes	1	3	9	13	26(15.02%)
	No	52	47	34	14	147(84.9%)
	Don't Know	0	0	0	0	-
4. What is the minimum safe distance for the operator for taking radiographs?	2 meters	9	19	18	13	59(34.1%)
	3 meters	32	21	17	11	81(46.8%)
	4 meters	12	10	8	3	33(19.07%)
5. Are dental radiographs completely contraindicated in pregnant patients?	Yes	26	13	10	11	60(34.6%)
	No	19	33	30	16	48(27.7%)
	Don't Know	8	4	3	0	15(8.6%)
Attitude and Practice						
6. Do you take multiple radiographs for your routine procedures?	Yes	17	11	7	14	49(28.3%)
	No	27	28	24	3	82(47.3%)
	Sometimes	9	11	12	10	42(24.27%)
7. What is your technique of choice of endodontic radiographs?	Bisecting	32	27	25	12	96(55.4%)
	Paralleling	11	21	16	13	61(35.2%)
	Don't Know	10	2	2	2	16(9.2%)
8. Conventional Radiography requires more exposure than digital radiography?	Yes	26	36	34	25	121(69.9%)
	No	8	10	3	2	23(13.2%)
	Don't Know	19	4	6	0	29(16.7%)
9. Are you accustomed with the use of dosimeter?	Yes	5	2	5	4	16(9.2%)
	No	48	48	38	23	157(90.7%)
10. Do you prefer to take radiographs for every carious teeth?	Yes	30	39	35	9	113(65.3%)
	No	22	11	6	18	57(32.9%)
	Don't Know	1	0	2	0	3(1.7%)

11. Do you advice patient's attendants to wait outside the X-ray room during the radiograph?	Yes	49	44	38	27	158(91.3%)
	No	2	4	2	0	8(4.6%)
	Don't Know	2	2	2	0	6(3.4%)
12. Do you use a lead apron or stand behind the lead barrier during radiographic procedure?	Yes	41	40	32	17	130(75.1%)
	No	4	7	6	6	23(13.2%)
	Don't Know	7	3	5	4	19(10.9%)
13. Do you use lead protection and thyroid collar for pregnant patients?	Yes	38	34	40	19	131(75.7%)
	No	15	16	3	8	42(24.27%)

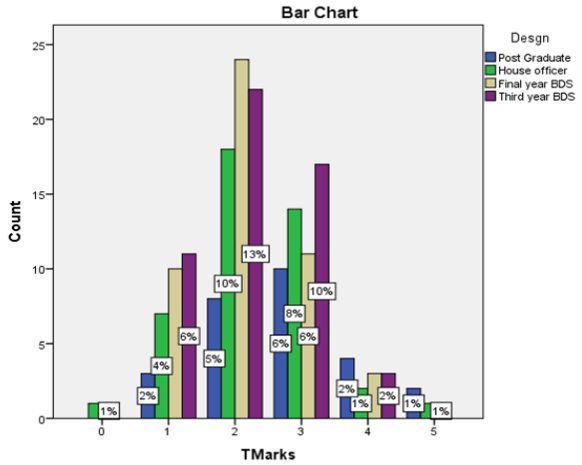

Figure No 1: Scores of knowledge component in different groups

and postgraduates so that they can protect themselves from radiographic hazards. Several similar studies have been carried out to access the knowledge of dental practitioners regarding radiographic protection.

The results of present study reveals that a high number of house officers and postgraduates have good knowledge about radiographic protection as also reported by Bahija Basher [11] in their study. Although at the same time there were also a relatively greater percentage of the ones with poor knowledge as reported in various previous studies. [3,5,11,12] Level of knowledge regarding radiation exposure protection increase corresponding to their level of academic.

Results also demonstrated that there was a significant shortage of students who had attended any workshops regarding radiographic protections. This finding is consistent with Arnout E. [5] The reason for this could be lack of interest of these students in attending such workshops or due to limited exposure. In this study majority of students exhibited a lack of interest in knowledge of radiographic protection. Arnout E. also stated in their study that knowledge of radiation protection in which dental students reported low levels of interest and confidence. This result is also in line with that of Sultan R.[13]

Regarding the satisfaction of house officers and postgraduates about their knowledge of radiographic protection, there were most of the students with no knowledge as compare with house officers and postgraduates similar to the results of Khan M [12] and Nagaraj T. [1]. This also signifies their interest toward learning more regarding radiographic protection. However, a significant number of house officers and post graduates were actually aware of radiographic protection and had a high percentage similar to the study of Arnout E at al. [5] but in contrast to Sultan R [13].

CONCLUSION

Present study concluded that the overall level of knowledge towards radiation protective measures among the third year, final year BDS students, house officers and postgraduate residents was fairly satisfactory. However the house officers and postgraduates showed good knowledge and attitude about radiographic protection when compared to the third and final year students. This highlights the need to increase awareness about radiographic protection among undergraduate student by arranging the variety of seminars, workshops, and encouraging them to participate in such programs which will be beneficial for their professional life in future.

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