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A survey based comparative study about dental clinical photography amongst intern and postgraduate students

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ABSTRACT

Background: Dental photography is a vital component in the diagnosis and documentation of dental cases. This study aimed to evaluate the familiarity, approach, and practice of dental interns and postgraduate students with respect to dental clinical photography. A total of 250 participants completed a questionnaire, with 78.4% being interns and 21.6% postgraduates. The study found that only 7.3% of participants used a DSLR camera for dental clinical photography, with mobile cameras being the most extensively used device. The high cost of equipment was cited as the primary reason for this. The study also revealed that learning and education needs to be significantly improved in dental clinical photography to ensure better documentation and patient confidentiality.

Photography has been widely used in health sciences, including dentistry, to diagnose, document, and record cases. Dental photography is renowned for aiding in clinical diagnosis, similar to the use of x-rays, laboratory workup, or other examinations or tests. However, the use of dental clinical photography varies widely among dental interns and postgraduate students. This study aimed to evaluate their familiarity, approach, and practice in this field.

Materials and Methods: A total of 250 participants, including dental interns and postgraduate students, completed a questionnaire about their familiarity, approach, and practice with dental clinical photography. The survey data were collected and analyzed to evaluate the use of different devices, patient consent and confidentiality, and the overall approach of participants towards dental photography.

Results: The study found that only 7.3% of participants used a DSLR camera for dental clinical photography, with mobile cameras being the most extensively used device. The high cost of equipment was cited as the primary reason for this. The majority of participants found it essential to document cases for marketing purposes. In terms of maintaining patient consent and confidentiality, informed consent was obtained from the majority of patients before documenting pictures. Additionally, a few of the participants covered their patient's eyes to avoid breaching confidentiality.

Conclusion: The study revealed that learning and education needs to be significantly improved in dental clinical photography to ensure better documentation and patient confidentiality. Dental photography can be made an intriguing subject to record cases efficiently and provide exceptional opportunities for instruction, patient simulation, and recall visits by students. Dental interns and postgraduate students need to be educated on the benefits and correct approach to dental clinical photography.

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1. Introduction

Photography has been utilized in dentistry for a considerable period of time, and is being used for various reasons in

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dentistry. Photographs are used to supervise the progress of various treatments and also to track the transition after the procedure. In the same way as radiography, study casts, and other investigations and testing are regarded as diagnostic tools, dental photography is considered at par.¹ Photographs are predominantly used for recording various lesions pre and post treatments. Other places where photographs are utilized are in providing proof in MLC's;² supporting disease detection and in implementation of procedures.³ serving as a tool for dental education and guidance for staff and students.⁴ assisting in guiding the patient and inspiring them.⁵ Instruction to patients, laboratories, other physicians, and insurance providers.⁶ serving as a tool for tutor for case discussion.⁶ Photographs also help in distant consultation from specialists who live across the globe, specifically for cases such as pre-malignant one's.⁷ Codes of conduct are established to manage risks and safeguard patients against potential harm, spanning from hazardous medical treatments to privacy violations. As a result, these codes outline the duties and account abilities of healthcare providers with the aim of minimizing risks.⁸ As a result, dental professionals must identify these risks and be judicious in their actions. The aim of our study was to gauge the knowledge perception and practices of interns and post-graduate in dental photography.

Table 1: Demographic data

Sr. No.	Questions	Responses	N Number	% Percentage	Total N (%)
1	Gender	Male	120	48	250 (100)
		Female	130	52	
2	Education	BDS	196	78.4	
		MDS	54	21.6	

2. Materials and Methods

An online survey was conducted among dental interns and postgraduate students to gauge their awareness, perspective and related practices regarding the use of dental photography in clinical situations. The duration of our study was for 2.5 months and selection of the participants was on the following basis: (A) Interns (B) Postgraduate students, all the participants were willing to take part in the study as a consent was taken prior to start of the study. The exclusion criteria was (A) people unwilling to participate in the study (B) Staff of any college. A convenient sampling technique was used.

The sample size was calculated using G*Power software version 3.1.9.2 (Heinrich Heine University, Dusseldorf)⁹ was 250 with the power of study being 80%, alpha error 0.05, effect size being 0.5 and the Degree of Freedom of 5. A digital, self-administered, closed ended questionnaire was developed using pre-validated questions. The questionnaire

consisted of twenty-seven questions further divided into four parts, 1) Demographic data 2.) Knowledge based questions 3.) Attitude based questions 4.) Practice based questions. The questionnaire was then distributed online on various online platforms such as Whatsapp, Instagram. The reliability statistics of the questionnaire calculated using Cronbach's alpha was 0.6. The participants were informed about the study and a consent was taken prior to the start of the study. All the collected data was then compiled in spreadsheets (Microsoft Excel 2016), and was statistically analyzed using descriptive statistics, where the P value was 0.5. The Statistical Package for the Social Sciences 23.0 version software (IBM, Chicago, Illinois, United States) was used for data analysis.

3. Results

A total of 250 participants from undergraduate and postgraduate programs took part in this study, out of which 48% were males and the remaining 52% were females. 78.4% of the participants had a BDS qualification and 21.6% had an MDS qualification.

In this study, 40% of the participants agreed that a doctor's recollection of memory was the best mode of reporting and documenting a case. Nonetheless, the use of a DSLR camera for the purpose of dental clinical photography was observed only in 7.3% of the aforementioned total population. The study also inferred mobile cameras as the most extensively used device (78.6%) in place of a DSLR for the same and was considered as the best method. Additionally, 78.6% of the study participants found it essential to document cases for marketing purposes, while only 10% believed in recording cases for outlining the treatment plan.

The high expense of equipment was specified as the primary reason for not demonstrating and storing information about the cases by 80% of the cohort. Moreover, a preponderance of the population was not well versed about the mirror required to take a quadrant/arch occlusal photograph used in dental photography. As a matter of fact, 52% of the cohort believed that no mirror was required in clinical photography. Likewise, 76% of the study population was unaware about the lens that is more often than not used in clinical photography. Conversely, the percentage of the study group that found it imperative to record cases was established at 51%.

With respect to maintenance of patient consent and confidentiality, informed consent was obtained from 73.2% of the study population before capturing their pictures in various forms. Additionally, 59.2% of the population covered their patient's eyes to avoid breach of confidentiality.

Table 2: Knowledge based questions

Sr. No.	Questions	Responses	N	%	Total N (%)
1	Which of the following course is a dental photography?	Integrated Dental Photography certificate course	15	6	250(100)
		Essentials of dental photography	100	40	
		Basic of dental photography	85	34	
		Dental photography in practice	50	20	
2	Which of the following is the best method to record and document case in day to day clinical practice?	Written on case paper	50	20	250(100)
		Dental photography	50	20	
		Doctors memory	100	40	
		Journal writing	50	20	
3	How do you document your cases?	Using camera	40	16	250(100)
		Case paper	120	48	
		Using Video system	30	12	
		Using patient given records.	60	24	
4	Type of camera do you use?	DSLR with ring flash	24	9.7	250(100)
		DSLR	18	7.3	
		Intraoral camera	11	4.4	
		Mobile camera	195	78.6	
5	Why do you think it is important to record cases?	Treatment planning	25	10	250(100)
		Diagnosis	17	6.8	
		Marketing	195	78.6	
		For discussion among friends.	11	4.4	
6	What has prevented you from documenting cases?	Lack of interest	25	10	250(100)
		Time consuming	20	8	
		Cost of the accessories	200	80	
		Other	5	2	
7	Do you know which mirrors are used to take a quadrant/arch occlusal photograph?	occlusal-buccal mirror	40	16	250(100)
		two way mirror	20	8	
		Reflective mirror	60	24	
		no mirror needed	130	52	
8	Which of the following reason is the most common reason for hindrance in dental photography and case recording	Patients objecting for taking clinical photographs	20	8	250(100)
		Patients having myths about doctors	80	32	
		Not having required equipment's	100	40	
		Patient not ready to give written consent	50	20	
9	What instruments is used while taking frontal view clinical photograph?	Condenser	52	4.8	250(100)
		Mouth mirror	65	5.6	
		William's probe	80	6.8	
		Cheek and lip retractors	53	82.4	
10	What is the type of lens used for clinical photography?	Macro lens [50-180mm]	90	36	250(100)
		Standard lens [35-85mm]	30	12	
		Standard lens [85-100mm]	60	24	
		Micro lens [25-50mm]	70	28	
11	Which is the best way of maintaining the confidentiality of the patient?	Cover the eyes of the patient	76	30.4	250(100)
		Mask the unique features of the patient	54	21.6	
		Photoshop the photograph	63	25.2	
		Only keeping the teeth of the patient in the picture.	57	22.8	
12	What is the best shutter speed for a DSLR camera to click dental photos?	1/1200 seconds	43	17.2	250(100)
		1/100 seconds	97	38.8	
		11/220 seconds	63	25.2	
		23/56 seconds	47	18.8	

Table 3: Attitude based questions

Sr. No.	Questions	Responses	N	%	Total N (%)
1	Do you think it is necessary to record your cases?	Strongly agree	42	16.8	250(100)
		Agree	87	34.8	
		Neutral	52	20.8	
		Disagree	42	16.8	
		Strongly disagree	27	10.8	
2	How far do you agree use of clinical photography has helped you in clinical scenario?	Strongly agree	86	34.4	250(100)
		Agree	49	19.6	
		Neutral	49	19.6	
		Disagree	36	14.4	
		Strongly disagree	30	12	
3	Do you agree documentation of the cases you do helps in further research?	Strongly agree	20	8	250(100)
		Agree	61	24.4	
		Neutral	40	16	
		Disagree	68	27.2	
		Strongly disagree	61	24.4	
4	How much do you agree that DSLR (digital single-lens reflex camera) is a must in recording clinical cases?	Strongly agree	39	15.6	250(100)
		Agree	57	22.8	
		Neutral	59	23.6	
		Disagree	57	22.8	
		Strongly disagree	38	15.2	
5	How far do you agree that cost of the accessories (DSLR) has prevented you from documentation of your cases?	Strongly agree	17	6.8	250(100)
		Agree	91	36.5	
		Neutral	9	3.6	
		Disagree	92	36.9	
		Strongly disagree	40	16	
6	How far do you agree that lack of interest has prevented you from documentation of your cases?	Strongly agree	53	21.2	250(100)
		Agree	24	9.6	
		Neutral	52	20.8	
		Disagree	72	28.8	
		Strongly disagree	49	19.6	
7	How far do you agree that it is a time consuming process to document every case and has prevented you from documentation of your cases?	Strongly agree	18	7.2	250(100)
		Agree	53	21.2	
		Neutral	44	17.6	
		Disagree	69	27.6	
		Strongly disagree	66	26.4	
8	How much do you agree that 100 mm lens is the best lens for dental photography?	Strongly agree	70	28	250(100)
		Agree	85	34	
		Neutral	33	13.2	
		Disagree	31	12.4	
		Strongly disagree	31	12.4	

4. Discussion

Our study had a near equal spread of participants between both the genders, and a vast difference in education levels, with excellent response rates from dental interns. While having a slight female predilection, the majority (78.4%) of participants were interns, while the minority (21.6%) were into a postgraduate course, which is in accordance with previously conducted studies by Alghulikah K et al.¹⁰ and Shaikh T et al.,¹¹ This might be a reflection of the having fewer postgraduates students than interns.

Importance of recording the cases for marketing purposes was marked seen in our study as 78.6% of the study population agreed to it, analogous to research done by

Harikrishnan R and Lakshmanan R,¹² while only smaller number of the participants believe in the importance of dental records for treatment purposes, which refutes another study where the authors believed treatment planning was a common reason for using pictures of the patients pre and post-operative.¹³

The study also found that 60% of participants disagree about the best method for recording and documenting cases being doctor's memory, in line with a study by Abouzeid HL et al.¹⁴ who observed that documenting cases in pictorial form was the most effective. In contrast, 78.6% of participants used mobile cameras to record cases, while only 7.3% used DSLR cameras, which conflicts with a study

Table 4: Practice based questions.

Sr. No.	Questions	Response	N	%	Total N (%)
1	Do you use photography in your clinical practice?	Yes	88	35.2	250(100)
		No	162	64.8	
2	Are you aware of a course called dental photography?	Yes	120	48	250(100)
		No	130	52	
3	Have you attended any course in dental photography?	Yes	85	34	250(100)
		No	165	66	
4	Do you think taking photos is improving the quality of your dental work?	Yes	177	70.8	250(100)
		No	73	29.2	
5	Do you take verbal consent from the patients before taking their photograph?	Yes	155	63.6	250(100)
		No	91	36.4	
6	Do you take written consent from the patient prior to clicking their photograph?	Yes	183	73.2	250(100)
		No	67	26.8	
7	Do you maintain the confidentiality of the patient by covering the eyes of the patient in the picture?	Yes	148	59.2	250(100)
		No	102	40.8	

by Sharland MR et al.¹⁵ who found that dental photography was common among general practitioners in Great Britain.

80% of the cohort stated that the cost of the accessories was the particular reason they were not documenting cases, since most participants could not afford the price of a DSLR camera. This runs counter to research by Khaled A.¹⁰ and Shaikh T et al.¹¹ but is in compliance with studies done by Rozan K. A. et al.¹⁵

Regarding patient consent and confidentiality, According to our study, the majority of the participants (73.2%) obtained permission from the patient before taking photographs, and 59.2% ensure patient confidentiality by covering their eyes. This finding suggests that dentists are becoming more conscious about protecting patient privacy, which is an improvement compared to a previous study conducted by Hoda LA et al.¹⁶ in 2020 and is consistent with the results of a similar study by Rozan K A et al.¹⁷ in 2021.

Ultimately, 76% of the participants were not aware of the standard lens used in clinical photography, possibly because they did not utilize mirror less or DSLR cameras to document cases.

5. Conclusion

The study concluded with the literacy mark of dental clinical photography not being up to the par and the demand to learn more and figure out the working of digital cameras needs to be put forth in front of the students. The students also need to fully comprehend the medico-legal aspects of clinical photography. This will amend the shortcomings faced during documentation and application of efficient patient care. Pursuing dental photography more as a personal preference rather than a job will ensure promising outcome rate and will give them improved prospects for teaching, patient stimulation and follow up visits.

6. Source of Funding

None.

7. Conflict of Interest

None.

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