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Research Article

The Use of Clinical Photography by Dental Students and Practitioners in Saudi Arabia

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Abstract

Introduction: The utilization of digital photography by dentists has increased over the past decade.

Aim: The current study aimed to evaluate the practice of dental photography among dental students and practitioners in Saudi Arabia, along with their attitudes about dental photography.

Methods: This cross-sectional study collected data from 300 dental students and dentists in Saudi Arabia. The self-administrated questionnaire was disseminated to participants to measure participants' practices regarding dental photography, benefits of dental photography and barriers to taking clinical photographs. P-value of less than 0.05 is used as significance level.

Results: Among the participants 78.70% usually take dental photographs (for patients or cases) and 49.30% respondents had attended a course in dental photography. The majority (75.70%) do take verbal consent before taking dental photograph, and 56.7% do cover patients eyes. The most important reasons for dental photographs are documentation (72.7%) and monitor the treatment outcome (71.7%). The most common barriers are time consuming (71.3%) and high cost (67.3%).

Conclusion: Most dental students and dentists in Saudi Arabia take dental photographs of their patients using their phone cameras, and they obtain verbal consent when taking dental photographs. It is also recommended that more restrictive guidelines be put in place for the posting of patient information without their permission by medical practitioners and to lead practitioners to avoid spending time on social media to prevent setbacks in academic performance.

Keywords: *Clinical Photography; Dental Students; Dentists; Saudi Arabia*

Abbreviations

m: Mean; SD: Standard Deviation

Background

The utilization of digital photography by dentists has increased over the past decade [1]. Technological advancements in digital photography have made it easier for dentists to apply digital photography in their daily dental practices, and it has replaced film photography [2], which is one of the most important aspects of the digital dental era [3]. Photography is the science and art of capturing images [4] and digital photography is becoming an indispensable tool in various fields, including medicine, science, industry, and design [5]. In the dental field, digital photography should be considered a diagnostic tool similar to radiographs, study casts, or other investigations [6]. The importance of photography as a clinical, administrative, and marketing tool includes the following: i) diagnosis and treatment planning; ii) dental education; iii) motivating the patient; iv) facilitation of communication with the laboratory, colleagues, and insurance companies; v) referral to specialists; vi) medico-legal purposes; and vii) advertising and marketing purposes [7-10]. Ideally, written consent should be obtained from a patient for permission to use these images [6]. These practices improve the quality of dental care and services [11].

At present, there is an obvious increase in the esthetic awareness of both patients and dentists [12]. Therefore, as appearance has become more important, digital photography has evolved to the extent where the treatment outcome can be seen even before starting the treatment, and comparisons can be made of the patient's pre-treatment and post-treatment [8,13]. Digital photography has numerous advantages over conventional photography, including immediate and easy access for users via computer, instant evaluation of the picture in order to retake any incorrect images during the same appointment, no extra equipment or expenses for film processing is required, it is easy to transfer images via email for consultation, and it provides for safe storage of images without the risk of fading film [13]. These advantages of digital photography provide dentists with a modern approach to studying clinical cases and planning treatment in the absence of the patient [14].

In dental practice, the most common photographic tools used include mobile phones, digital single-lens reflex (DSLR) cameras, compact cameras, and intra-oral cameras [6]. DSLR cameras have been considered the gold standard for photographic documentation, but today's smartphone camera has become the major photographic tool in dentistry because they generally have high-quality upgraded cameras that are lighter in weight, and these save time over using DSLR cameras [15].

Many studies have been conducted internationally to evaluate the use of dental photography among dental professionals. When asked about the benefits of taking dental photographs, the highest percentage of the responses was for treatment planning among the respondents from a variety of countries, including India [7], Bulgaria [14] and the UK [1]. This is different from a study conducted in Saudi Arabia, where 53% of dental students indicated that the greatest benefit of dental photographs was for patient education purposes [6]. Conversely, the most common reason given for not undertaking clinical photography was a shortage of time, according to Saudi and Indian dental students and practitioners [7,15], while in the UK, there was ignorance of clinical photography due to no perceived need [1].

In Saudi Arabia, two recent studies showed that most participants acquired verbal consent when taking photographs of a patient, according to 84% and 70% of the respondents [6,15]. Furthermore, Saudi dental students and practitioners indicated that they use clinical photography on a regular basis and that a commonly used camera is their phone's camera. However, the need for dental photography education is highly recommended because 68% of respondents did not have enough training to take dental photographs [15].

Students need digital photography to record patient clinical status for case presentation and discussion as part of their dental curriculum for comprehensive clinical case assessment [16]. Therefore, more effort should be taken to improve dental students' knowledge about the basic principles of photography, devices, accessories, and photographic skills in the current dental education system [17,18].

Aim of the Study

Thus, the current study aimed to evaluate the practice of dental photography among dental students and practitioners in Saudi Arabia, along with their attitudes about dental photography.

Materials and Methods

This cross-sectional study assessed the practices and attitudes regarding dental photography among dentists and dental students in Saudi Arabia, using a convenience sampling technique to ensure equal distribution of the responses. To maintain social distancing, the questionnaire was distributed online through various social media applications, including WhatsApp, Twitter, Telegram, and Facebook, targeting different levels of dental students and practitioners from both genders. Data were collected from September to November 2021. The investigators recruited participants based on inclusion and exclusion criteria, with the inclusion criteria being 1) dental students or practitioners and 2) living in Saudi Arabia. The exclusion criteria were retired dentists and participants who would not agree with the study's informed consent. All participants had to agree to the informed consent form before completing the online self-administered questionnaire, which took approximately three to five minutes to complete. All responses were kept anonymous.

The structured self-reported questionnaire was designed in Google Forms and consisted of 16 questions divided into three sections. Section one asked about sociodemographic characteristics, including gender, age, work status, study place, experience in dentistry, region of residence in Saudi Arabia, and nationality. Section two included seven questions to assess practices around dental photography. The last section evaluated attitudes toward dental photography with two questions that had yes or no answers.

Data were tabulated and descriptive statistics were calculated using SSPS v.25 (IBM, Inc., Armonk, NY, USA). Data were analyzed using ANOVA, linear regression, chi-square and t-tests and are presented as descriptive statistics by the mean (m), standard deviation (SD), frequency, and percentages. A value of less than 0.05 was considered significant.

Results

The data for this study came from 300 participants, with m = 26.26 years and SD = 4.15. The participants' demographic data are displayed in table 1.

Item	Answers	Count	%
Gender	Male	116	38.70%
	Female	184	61.30%
Qualifications	Student	59	19.70%
	Intern	111	37.00%
	General practitioner/ resident	116	38.70%
	Specialist/consultant	14	4.70%
Organization	Governmental	147	49.00%
	Private	153	51.00%
Experience in dentistry	Less than 5 years	242	80.70%
	5 - 10 years	51	17.00%
	More than 10 years	7	2.30%
Region in Saudi Arabia	East	146	48.70%
	West	53	17.70%
	North	31	10.30%
	South	55	18.30%
	Central	15	5.00%
Nationality	Saudi	290	96.70%
	Non-Saudi	10	3.30%

Table 1: *Participants' demographic data.*

A total of 268 (89.30%) respondents strongly agreed that it is necessary to record dental cases with photographs, while 25 (7.30%) were neutral, and 7 (2.30%) disagreed. Among the participants, 236 (78.70%) usually take dental photographs (for patients or cases). The data show that only 148 (49.30%) respondents had attended a course in dental photography, but 242 (80.70%) want to attend a course about dental photography in the future. When participants were asked about their practices using dental photography, they answered as shown in table 2.

Question	Choice	Count	%
If you did take dental photographs, did you obtain patient consent?	Verbal consent	227	75.70%
	Written consent	16	5.30%
	Verbal and written consent	41	13.70%
	I do not obtain patient consent	3	1.00%
	I never took any photographs during my dental study or work	13	4.30%
How do you maintain the confidentiality of the patient in a photo?	Cover the eyes of the patient	170	56.70%
	Mask the unique features of the patient	30	10.00%
	Photoshop the photograph	83	27.70%
	I do not maintain patient confidentiality	4	1.30%
	I never took any photographs during my dental study or work	13	4.30%
Use of dental photography.	DSLR	97	32.30%
	Normal digital camera	101	33.70%
	Phone camera	221	73.70%
	Never take photos	13	4.30%

Table 2: *Participants' practices regarding dental photography.*

Participants' beliefs about the benefits of dental photography are shown in table 3 and their beliefs about the barriers to using dental photography are provided in table 4.

Benefits	Count	%
Documentation	218	72.70%
Monitor the treatment outcome	215	71.70%
Treatment planning	204	68.00%
Patient education	148	49.30%
Study/research purposes	122	40.70%
Study the case	109	36.30%
Publicity and advertisements	89	29.70%
Medico-legal reasons	79	26.30%

Table 3: *Benefits of dental photography.*

Barriers	Count	%
Time consuming	214	71.30%
High capital cost	202	67.30%
Limited knowledge	121	40.30%
Infection control risk	90	30.00%
Have no interest in photographs	78	26.00%
No perceived need/demand	1	0.30%

Table 4: *Barriers to taking clinical photographs.*

Discussion

This cross-sectional study aimed to evaluate the practices and attitudes around dental photography among dental students and practitioners in Saudi Arabia. The findings of this study are that most participants did take dental photographs of their patients, mostly using their phone cameras. Three-quarters of the participants said they obtained verbal consent when taking dental photographs, and around half of them indicated that they covered the patient's eyes to ensure confidentiality. Only half had attended a course in dental photography, but the majority wanted to attend one in the future. The most highly rated benefits of dental photographs were documentation and monitoring the treatment outcome, while the most frequently cited barriers were that photography was time-consuming and had a high cost.

The major results of this study were among the practice and attitude questions. In this study, most of the participants reported using dental photography in their daily clinical practice (78.70%). Similar findings were reported by Sweetha and colleagues from India in a survey of dentists [7] in, which 74% of their respondents answered positively. However, another study of Bulgarian dentists showed less use of dental photography, with only 30% stating they used photography in their practices [14]. This might indicate that there are different priorities among dentists in their practices in different countries.

Today's smartphone cameras have many advanced features that allow for the easy taking of high-quality pictures [5]. Many studies have highlighted that the most popular and commonly used camera for dental photography is the phone camera; in this study, 73.70% of respondents indicated that they preferred their phone camera over other types of cameras. Similarly, in India, nearly half of the participants in one study indicated that they used their phone camera [7]. Conversely, in Bulgaria, 71% chose a digital compact camera as the preferred type [14]. There is no clear justification for this point. However, it might be the advantages of DSLR cameras, given their wide range of options in changing parameters, such as exposure (ISO sensitivity), shutter speed, and aperture [19].

There are many benefits to using photography in dental practice, and the highest percentage chosen in this study was for documentation purposes (72.70%). This is different from results reported in other countries, such as studies where British and Indian dentists indicated the most frequent use of dental photography was for treatment planning, with 84% and 40% of respondents, respectively indicating such use [1,7]. One of the explanations for this discrepancy is that every dentist has personal goals and different kinds of cases.

In the present study, when participants were asked about reasons for not undertaking clinical photography, 71.30% agreed that shortage of time was the main barrier, followed by the high cost of photographic tools (61%). This contrasts with the British study, where time consuming was ranked second, at 41%, and no perceived need or demand was the most common response, at 58% [1]. The reasons for this difference might be due to different patient flows and patient economic status or a shortage of dental assistants who can save time by helping the dentist with photography.

Few studies have asked about the anonymity of dental patients in dental photographs. When the participants in the present study were asked if they usually obtained patient consent and how they maintained the confidentiality of patients in presentations and research publications, our results were favorable, with 75.70% indicating that they did acquire verbal consent and 56.70% keeping patient con-

fidentiality by covering the patient's eyes. Similarly, when the same questions were asked in an earlier study conducted in Saudi Arabia among dental students, 84% indicated that they obtained verbal consent, and 44.4% stated that they used Photoshop to maintain patient confidentiality [6]. Thus, the results continue to indicate that most dental students and practicing dentists adhere to professional ethics in their daily dental work. This also indicates that dental professionals are knowledgeable about this area.

The findings showed that only half of the participants had attended a class in dental photography, while most of them want to attend a course about dental photography in the future. Therefore, it is highly recommended that instruction in dental photography be provided. The utilization of these research findings will contribute to the development of professional educational campaigns, educational curricula, and workshops for dental professionals and dental students regarding the importance of dental photography. This, in turn, impacts dentists' ability to effectively practice dental photography with a high level of commitment to professional ethics.

This study has some strengths, including a relatively large sample size and a diversity of cities. Some of the limitations are the self-reported questionnaire and the convenience sampling method. In addition, the questionnaire was very simple, and more points are needed for a better investigation into the practices and attitudes around dental photography.

Conclusion

Most dental students and dentists in Saudi Arabia take dental photographs of their patients using their phone cameras, and they obtain verbal consent when taking dental photographs. Around half of them cover patients' eyes to ensure confidentiality. The main advantages of dental photographs indicated by our respondents were documentation and monitoring treatment outcomes. The authors of this study recommend that stakeholders in dental faculties and dental centers increase awareness about the importance of dental photograph courses and work to make them available at reasonable costs so that dental professionals can learn to produce better quality photographs (even with phone cameras) for documentation and monitoring treatment outcomes.

It is also recommended that more restrictive guidelines be put in place for the posting of patient information without their permission by medical practitioners and to lead practitioners to avoid spending time on social media to prevent setbacks in academic performance.

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