



Open access Journal

International Journal of Emerging Trends in Science and TechnologyIC Value: 76.89 (Index Copernicus) Impact Factor: 4.849 DOI: <https://dx.doi.org/10.18535/ijetst/v5i7.03>

Dental Photography as a Method of Documentation in Saudi Arabia

Authors

**Rabea Basri¹, Nusrat Alam Chowdhury¹, Ghaida Alaskar¹, Hajer Aldawood¹
May Al Khudairy², Ashwin Shetty³**

¹Dental Intern, Dental University Hospital, Riyadh Elm University,

²BDS, DMSc, Faculty Member of OMFS department, Riyadh Elm University,

³BDS, MSc(UK), MPhil(UK), Faculty Member of Restorative Dentistry department, Riyadh Elm University

Corresponding Author

Rabea Basri

Dental Intern, Dental University Hospital, Riyadh Elm University

P.O Box: 84891, Riyadh 11681, Saudi Arabia

Email: rbbasri85@gmail.com, Telephone: (+966) 0540270307

Abstract

Aim: To determine the application of dental photography throughout Saudi Arabia in the daily clinical practice by the dental healthcare professionals, to evaluate its application in the academic clinic and to evaluate the risk of infection control.

Materials and Methods: The survey was conducted in hard and soft copies with self-administered 20 closed question questionnaires, an optimal sample size was approximated at 383 and 596 responses were collected. The data were analyzed through IBM SPSS (Statistical Package for Social Sciences) Statistics Windows version 22

Findings: From the online survey, 133 responses were included for analysis and from the hardcopy distribution; a respectable 463 questionnaires were included from an original 600. The mean age of respondents was 24.72 years (range 20-56) and more dental students responded than dentists (84.9% versus 15.1%).

Conclusion: Majority of the respondents were dental students having multitude of assignments, time is therefore a critical factor which played a major role in their hesitation to document their cases photographically. Last but not least, lacking an assigned personal dental assistant encourages dental students to use their mobile cameras and take verbal consent over written consent when dealing with their patients.

Keywords: dental photography, dental students, mobiles, cameras, dslr, survey.

Introduction

Dental photography has become an indispensable part of modern dentistry, all the modern equipment, advanced technologies has refined and made it easier for the modern dentists to apply it in their day to day life.

Nowadays the mobile phone has high quality upgraded cameras to the point that it is used as one of the major photographic tools in dentistry. However, thus far not reaching the quality nor

standard achieved by cameras marketed for dentistry such as Nikon and Canon.

Most common photographic tools are used in Dentistry:

1. Mobile phones
2. Cameras (DSLR, compact cameras)

Cairns in his study of 2016^[1] stated that the photographic tool can be categorized into 3 parts upon their quality:

Good—Smartphone accessories, which can enhance a smartphone’s photography capabilities for dental images

Better—Point-and-shoot digital camera with macro lens and diffuser

Best—Digital single-lens reflex (DSLR) camera with macro lens and multiple flash option

Foong et al. in 2015^[2] showed in his study that medical students’ phones are contaminated with 5% of harmful bacterial like Staphylococcus aureus.

This study was conducted to determine the application of dental photography throughout Saudi Arabia in the daily dental practice, to evaluate its application in the academic clinic and to evaluate the risk of infection control.

Material and Methods

The study received ethical approval from the research centre of Riyadh Elm University (RC/IRB/2016/453). An online (SurveyMonkey®)

and hardcopy of self-administered 20 closed ended questionnaires was made.

An optimal sample size of 383 was recommended as the minimal amount for power of the sample. However, a surprising total of 596 respondents responded to the survey. The surveys were distributed to private and government institutions. The data collection took 5 weeks to complete and the data was entered into IBM SPSS (Statistical Package for Social Sciences) Statistics Windows version 22 for statistical analysis, Chi square Test was applied, P value was set at <0.05. To reiterate, there were 2 Groups; Dental Students and General Dentists.

Results

From the online survey, 133 responses were included into the analysis and from the hardcopies 463 responses were included from an original 600.

Table I: Frequency distribution of respondents demographic profile

		FREQUENCY	PERCENT
GENDER	Female	487	81.7
	Male	108	18.1
AGE	18-24	415	69.6
	25-34	138	23.2
	35-44	19	3.2
	45-54	7	1.2
	55 and above	17	2.9
TYPE OF PRACTICE	Government	113	19.0
	Private	474	79.5
CURRENT POSITION	Dental Student	499	84.9
	Dentist	89	15.1

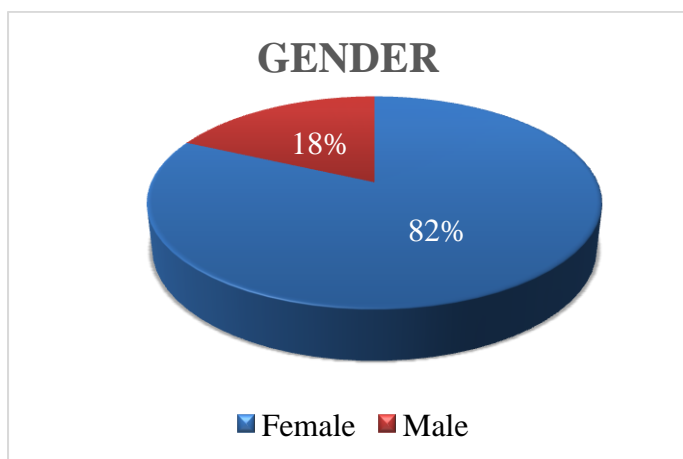


Figure 1: Gender Distribution

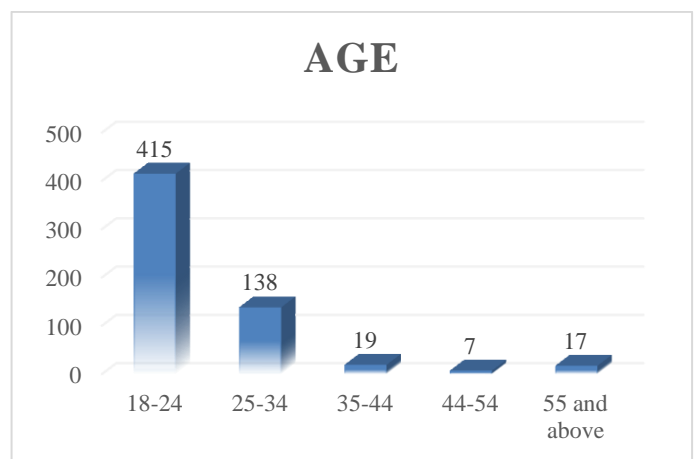


Figure 2: Age Distribution

TYPE OF PRACTICE

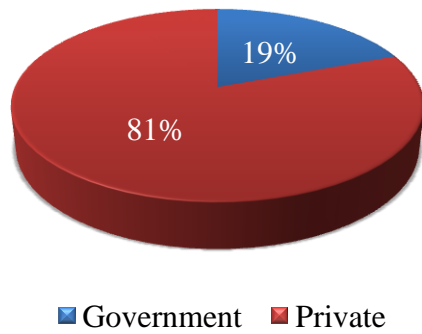


Figure 3: Type of Practice Distribution

POSITION

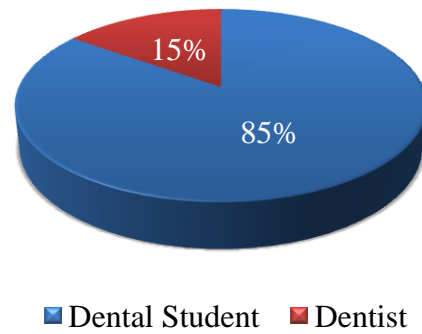


Figure 4: Position Distribution

Table II: Frequency distribution of asked questions in the survey

		FREQUENCY	PERCENT
Do you feel that you have enough training to take dental photographs?	YES	188	31.5
	NO	405	68.0
Do you take dental photographs for your every patient?	YES	144	24.2
	NO	448	75.2
Do you take verbal or written consent while taking photographs of your patient?	Written	76	12.8
	Verbal	416	69.8
	No consent	100	16.8
While taking dental photographs, what do you prefer?	Mobile phones	304	51.0
	Camera	267	44.8
Which of the following are the most common reasons that prevent you from taking patient photographs?	Time	375	48.3
	Patient Consent	106	13.6
	Bulkiness of camera	57	7.3
	Lack of Dental auxiliary (cheek retractors, mirrors etc.)	159	20.5
	Not applicable (easy to take photographs)	80	10.3
If you use mobile phones for taking dental photographs, which brand are you currently using?	iPhone	452	75.8
	Samsung	40	6.7
	Huawei	8	1.3
	LG	6	1.0
	Nokia	7	1.2
	Sony	6	1.0
	I don't use mobile phones	62	10.4
If you prefer camera in taking dental photographs, which model are you currently using?	Other	6	1.5
	Canon	289	48.5
	Nikon	101	16.9
	Sony	19	3.2
	Fujifilm	5	0.8
Do you switch from camera to mobile phone or vice versa, in taking photographs?	I don't use camera	155	26.0
	Other	7	1.2
Do you switch from camera to mobile phone or vice versa, in taking photographs?	YES	330	55.4
	NO	266	44.6
Do you think quality matters in dental photographs?	YES	547	91.8
	NO	43	7.2
Do you work with an assistant while taking dental photographs?	Sometimes	309	51.8
	Always	232	38.9
	Never	53	8.9
Do you think the presence of an assistant will affect the quality of your photographs?	YES	538	90.3
	NO	55	9.2
Do you think mobile phones or cameras pose an issue as cross contamination in the clinic?	Camera	58	9.7
	Mobile phone	83	13.9
	Both	379	63.6
	None	72	12.1
Do you follow any infection control protocol for cleaning your camera/ mobile phones in the clinic?	YES	466	78.2
	NO	124	20.8
Do you feel that infection control measures is better if you have a dental assistant available?	YES	542	90.9
	NO	53	8.9
Are you aware that proper photographic documentation might play a big role in forensic dentistry?	YES	511	85.7
	NO	81	13.6
Do you think that dental photography should be introduced as an undergraduate course?	YES	444	74.5
	NO	146	24.5

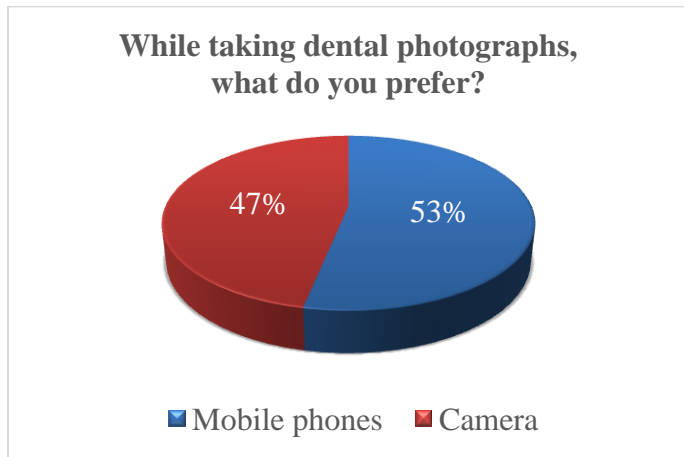
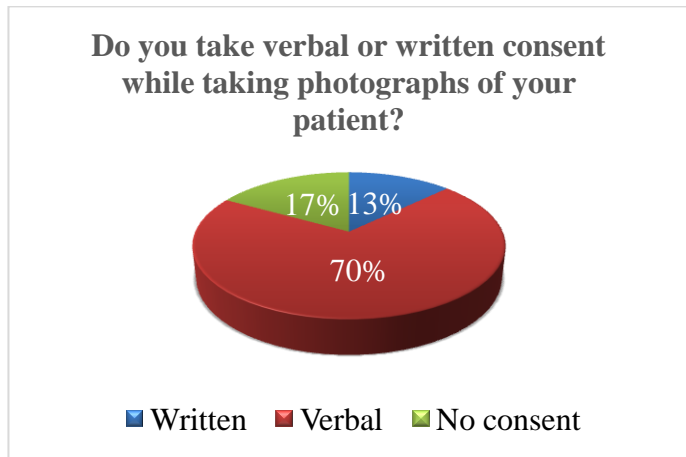


Figure 5: Preference of the type for taking consent **Figure 6:** Response in choosing the photographic device

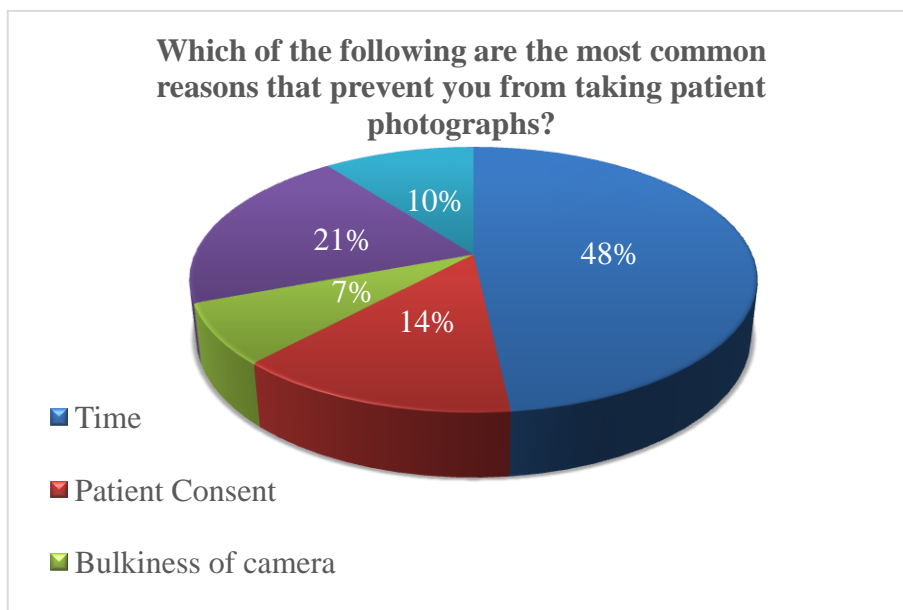


Figure 7: Response to the question of obstacle in dental photography

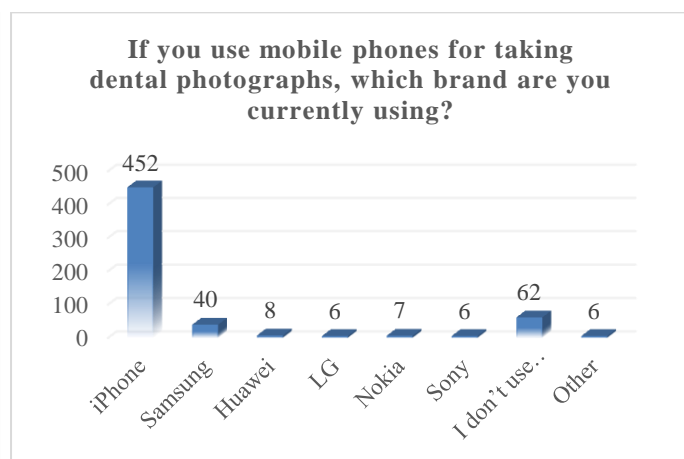
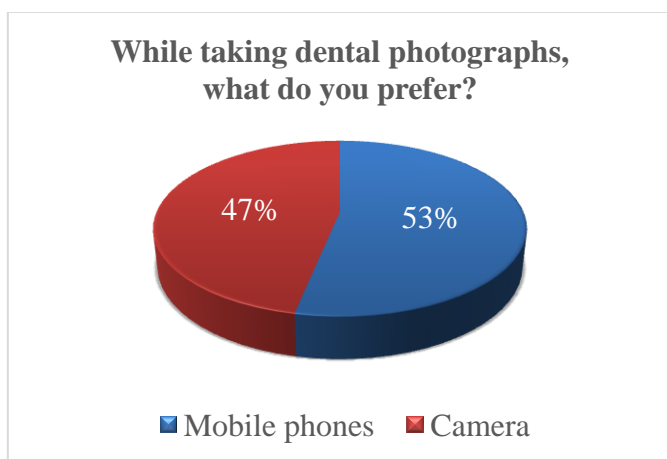
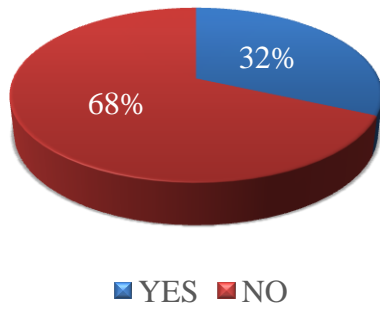


Figure 8: Response in choosing the photographic device

Figure 9: Preference in the model of mobile phones for dental photography

Do you feel that you have enough training to take dental photographs?



Do you think mobile phones or cameras pose an issue as cross contamination in the clinic?

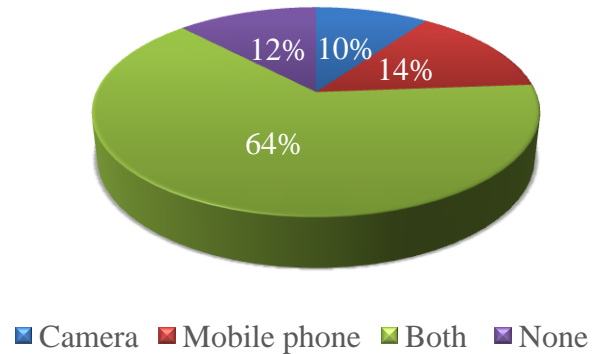


Figure 10: Response to the question of enough training

Figure 11: Response to the question of device contamination in the clinic

Table III: Association between the gender and the responses- n/ (%)

		Do you feel that you have enough training to take dental photographs?							P Value	
		YES				NO				
Female		142 (29.3)				342 (70.7)			.007	
Male		46 (42.6)				62 (57.4)				
		Do you take dental photographs for your every patient?							P value	
		YES				NO				
Female		109 (22.5)				375 (77.5)			.026	
Male		35 (32.7)				72 (67.3)				
		Do you take verbal or written consent while taking photographs of your patient?							P Value	
		Written		Verbal			No consent			
Female		50 (10.4)		352 (72.9)			81 (16.8)		0.000	
Male		26 (24.1)		63 (58.3)			19 (17.6)			
		While taking dental photographs, what do you prefer?							P value	
		Mobile phones				Camera				
Female		249 (53.3)				218 (46.7)			.988	
Male		55 (53.4)				48 (46.6)				
		If you use mobile phones for taking dental photographs, which band are you currently using?								P Value
		iPhone	Samsun g	Huaw ei	LG	Nokia	Sony	I don't use mobile phone	Other	
Female		388 (80.7)	26 (5.4)	5 (1.0)	3 (0.6)	5 (1.0)	5 (1.0)	45 (9.4)	4 (0.8)	.001
Male		63 (60.0)	14 (13.3)	3 (2.9)	3 (2.9)	2 (2.9)	1 (1.9)	17 (16.2)	2 (1.9)	
		If you prefer camera in taking dental photographs, which model are you currently using?								P Value
		Canon	Nikon	Sony	Fujifilm	I don't use camera		Other		
Female		241 (51.4)	76 (16.2)	15 (3.2)	3 (0.6)	127 (27.1)		7 (1.5)		.239
Male		47 (44.3)	25 (23.6)	4 (3.8)	2 (1.9)	28 (26.4)		0		
		Do you switch from camera to mobile phone or vice versa, in taking photograph?							P Value	
		YES				NO				
Female		285 (58.5)				202 (41.5)			.001	
Male		44 (40.7)				64 (59.3)				
		Do you think quality matters in dental photographs?							P value	
		YES				NO				
Female		450 (93.4)				32 (6.6)			0.190	
Male		96 (89.7)				11 (10.3)				
		Do you work with an assistant while taking dental photographs?							P Value	
		Sometimes		Always			Never			
Female		255 (52.6)		186 (38.4)			44 (9.1)		.812	
Male		54 (50.0)		45 (41.7)			9 (8.3)			
		Do you think the presence of an assistant will affect the quality of your photograph?							P Value	
		YES				NO				
Female		445 (91.6)				41 (8.4)			.125	
Male		92 (86.8)				14 (13.2)				
		Do you think mobile phones or cameras pose an issue as cross contamination in the clinic?								P Value
		Camera		Mobile phone			Both		None	
Female		48 (9.9)		64 (13.2)			319 (65.8)		54 (11.1)	0.155
Male		10 (9.4)		19 (17.9)			59 (55.7)		18	

				(17.0)
	Do you follow any infection control protocol for cleaning your camera/ mobile phones in the clinic?			
	YES		NO	
Female	390 (81.1)		91 (18.9)	
Male	75 (69.4)		33 (30.6)	
	Do you feel that infection control measures is better if you have a dental assistant available?			
	YES		NO	
Female	438 (90.1)		48 (9.9)	
Male	103 (95.4)		5 (4.6)	
	Are you aware that proper photographic documentation might play a big role in forensic dentistry?			
	YES		NO	
Female	422 (87.2)		62 (12.8)	
Male	88 (82.2)		19 (17.8)	
	Do you think that dental photography should be introduced as an undergraduate course?			
	YES		NO	
Female	359 (74.5)		123 (25.5)	
Male	84 (78.5)		23 (21.5)	

Table IV: Association between the type of practice and the responses- n/ (%)

	Do you feel that you have enough training to take dental photographs?								
	YES			NO			P Value		
Government	31 (27.9)			80 (72.1)			.367		
Private	153 (32.3)			320 (67.7)					
	Do you take dental photographs for your every patient?								
	YES			NO			P Value		
Government	26 (23.2)			86 (76.8)			.834		
Private	114 (24.2)			358 (75.8)					
	Do you take verbal or written consent while taking photographs of your patient?								
	Written			Verbal			No consent		P Value
Government	20 (17.7)			79 (69.9)			14 (12.4)		.099
Private	54 (11.5)			330 (70.2)			86 (18.3)		
	While taking dental photographs, what do you prefer?								
	Mobile phones			Camera			P Value		
Government	31 (28.2)			79 (71.8)			.000		
Private	269 (59.4)			184 (40.6)					
	If you use mobile phones for taking dental photographs, which band are you currently using?								
	iPhone	Samsung	Huawei	LG	Nokia	Sony	I don't use mobile phone	Other	P Value
Government	82 (73.9)	7 (6.3)	0	0	2(1.8)	2 (1.8)	18 (16.2)	0	.183
Private	366 (78.4)	30 (6.4)	8 (1.7)	5 (1.1)	5 (1.1)	4 (0.9)	43 (9.2)	6 (1.3)	
	If you prefer camera in taking dental photographs, which model are you currently using?								
	Canon	Nikon	Sony	Fujifilm	I don't use camera	Other		P Value	
Government	56 (51.4)	23 (21.1)	3 (2.8)	0	27 (24.8)	0		.531	
Private	227 (49.5)	78 (17.0)	16 (3.5)	5 (1.1)	126 (27.5)	7 (1.5)			
	Do you switch from camera to mobile phone or vice versa, in taking photograph?								
	YES			NO			P Value		
Government	66 (58.4)			47 (41.6)			.520		
Private	261 (55.1)			213 (44.9)					
	Do you think quality matters in dental photographs?								
	YES			NO			P Value		
Government	103 (92.0)			9 (8.0)			.840		
Private	436 (92.8)			34 (7.2)					
	Do you work with an assistant while taking dental photographs?								
	Sometimes			Always			Never		P value
Government	42 (37.2)			61 (54.0)			10 (8.8)		.001
Private	261 (55.3)			168 (35.6)			43 (9.1)		
	Do you think the presence of an assistant will affect the quality of your photograph?								
	YES			NO			P Value		
Government	100 (88.5)			13 (11.5)			.349		
Private	432 (91.3)			41 (8.7)					
	Do you think mobile phones or cameras pose an issue as cross contamination in the clinic?								
	Camera		Mobile phone			Both		None	P Value
Government	17 (15.2)		15 (13.4)			57 (50.9)		23 (20.5)	.001
Private	39 (8.3)		67 (14.2)			317 (67.3)		48 (10.2)	
	Do you follow any infection control protocol for cleaning your camera/ mobile phones in the clinic?								

	YES	NO	P Value
Government	92 (82.1)	20 (17.9)	.364
Private	367 (78.3)	102 (21.7)	
Do you feel that infection control measures is better if you have a dental assistant available?			
	YES	NO	P Value
Government	108 (96.4)	4 (3.6)	.032
Private	427 (90.1)	47 (9.9)	
Are you aware that proper photographic documentation might play a big role in forensic dentistry?			
	YES	NO	P Value
Government	93 (82.3)	20 (17.7)	.131
Private	413 (87.7)	58 (12.3)	
Do you think that dental photography should be introduced as an undergraduate course?			
	YES	NO	P Value
Government	84 (75.0)	28 (25.0)	.841
Private	356 (75.9)	113 (24.1)	

Table V: Association between the Professionals and the Responses- n/ (%)

	Do you feel that you have enough training to take dental photographs?								P Value	
	YES				NO					
Dental student	49 (30.0)				342 (70.7)				.007	
Dentist	36 (40.9)				62 (57.4)					
Do you take dental photographs for your every patient?										
	YES				NO				P value	
Dental student	125 (25.2)				375 (77.5)				.026	
Dentist	17 (19.3)				72 (67.3)					
Do you take verbal or written consent while taking photographs of your patient?										
	Written		Verbal			No consent		P Value		
Dental student	48 (9.7)		352 (72.9)			81 (16.8)		0.000		
Dentist	27 (30.3)		63 (58.3)			19 (17.6)				
While taking dental photographs, what do you prefer?										
	Mobile phones				Camera				P value	
Dental student	277 (57.8)				218 (46.7)				.988	
Dentist	23 (27.4)				48 (46.6)					
If you use mobile phones for taking dental photographs, which band are you currently using?										
	iPhone	Samsung	Huawei	LG	Nokia	Sony	I don't use mobile phone	Other	P Value	
Dental student	406(82.0)	26 (5.4)	5 (1.0)	3 (0.6)	5 (1.0)	5 (1.0)	45 (9.4)	4 (0.8)	.001	
Dentist	42 (50.0)	14 (13.3)	3 (2.9)	3 (2.9)	2 (2.9)	1 (1.9)	17 (16.2)	2 (1.9)		
If you prefer camera in taking dental photographs, which model are you currently using?										
	Canon	Nikon	Sony	Fujifilm	I don't use camera	Other		P Value		
Dental student	250(51.8)	76 (16.2)	15 (3.2)	3 (0.6)	127 (27.1)	7 (1.5)		.239		
Dentist	35 (41.2)	25 (23.6)	4 (3.8)	2 (1.9)	28 (26.4)	0				
Do you switch from camera to mobile phone or vice versa, in taking photograph?										
	YES				NO				P Value	
Dental student	282 (56.5)				202 (41.5)				.001	
Dentist	45 (50.6)				64 (59.3)					
Do you think quality matters in dental photographs?										
	YES				NO				P value	
Dental student	466 (94.1)				32 (6.6)				0.190	
Dentist	77 (88.5)				11 (10.3)					
Do you work with an assistant while taking dental photographs?										
	Sometimes		Always			Never		P Value		
Dental student	261 (52.5)		186 (38.4)			44 (9.1)		.812		
Dentist	47 (52.8)		45 (41.7)			9 (8.3)				
Do you think the presence of an assistant will affect the quality of your photograph?										
	YES				NO				P Value	
Dental student	451 (90.7)				41 (8.4)				.125	
Dentist	81 (92.0)				14 (13.2)					
Do you think mobile phones or cameras pose an issue as cross contamination in the clinic?										
	Camera		Mobile phone			Both		None		P

				Value
Dental student	50 (10.1)	64 (13.2)	319 (65.8)	54 (11.1)
Dentist	8 (9.0)	19 (17.9)	59 (55.7)	18 (17.0)
Do you follow any infection control protocol for cleaning your camera/ mobile phones in the clinic?				
	YES	NO	P Value	
Dental student	389 (78.9)	91 (18.9)	0.007	
Dentist	72 (80.9)	33 (30.6)		
Do you feel that infection control measures is better if you have a dental assistant available?				
	YES	NO	P Value	
Dental student	453 (91.0)	48 (9.9)	.084	
Dentist	82 (92.1)	5 (4.6)		
Are you aware that proper photographic documentation might play a big role in forensic dentistry?				
	YES	NO	P Value	
Dental student	430 (86.7)	62 (12.8)	.178	
Dentist	74 (84.1)	19 (17.8)		
Do you think that dental photography should be introduced as an undergraduate course?				
	YES	NO	P Value	
Dental student	370 (74.9)	123 (25.5)	.383	
Dentist	68 (77.3)	23 (21.5)		

Discussion

Upon deciding the photographic tool, majority of them selected mobile phones as their choice and one study done in 2017 by Haron et. al^[3] showed that the widely used of mobile has been increased in Oral & Maxillofacial Surgery department for screening oral lesions and to refer a patient or not. They found it easier to take photographs especially it is a very light device other than the camera. They even compared the resolution of the mobile phone camera, the values improved with the resolution of the phone camera where sensitivity and specificity of 81.3% and 100% can be achieved with phone, where the camera resolution was 1080 · 1920 pixels. Hammond B. et Al^[4] stated in their study in 2017 stated that while images can be taken with smart phone cameras, the authors highly recommend using a digital SLR camera system that will give the operator better control over image exposure and provide consistent, high quality photographs.

In recent years, the development of the camera in mobile phones has increased its use in the clinic increasing the rate of photographic evidence at the expense and jeopardy of using quality cameras such as traditional and dependable Canon and Nikon. This is a double-edged sword whereby dental health professionals and their patients have become increasingly comfortable and relaxed amidst the camera phone usage versus being intimidated by the

use of heavier and bulkier cameras like Canon and Nikon. To elaborate, dental professionals reported higher verbal consent from their patients compared to written consent due to the ease of use of mobile cameras which is the new revolution of mobile phones that has overwhelmed the camera industry. The mobile phone industry has desensitized people to the use of cameras with selfies, blogs, snapshots etc. to the point that patients are not alarmed nor hesitant to give their consent verbally as opposed to written consent at the drop of a hat when their dental health practitioner casually moves his/her phone from their pockets to snap a shot of their patients' oral cavity.

In a recent study done in 2017 by Altiparmakogullari, Y. et al^[5], showed that the equipment of the photographs, crew needed for better photographs and many other factors prevent the clinician in taking high quality photographs but emphasize having better designed environment to achieve a better quality photographs. In our study, majority of responders accounted for (85%, n=499) of dental students. It should be noted that they are riddled with a schedule complete with clinical requirements, assignments, case presentations amongst others making Time an obstacle that is taking over their day to day lives at the dental school. This may explain why time is the main reason for not taking their patients photographs. In addition, to the lack of a dedicated and assigned

One on One dental assistant that would also help with the photography of patients, along with the proposed procedure armamentarium,

As our investigation showed that the majority of the dentists (64%, n=379) think, camera and mobile phone both can act as a cross contamination issue in the clinic, where they also responded that they follow an infection control protocol for cleaning their photographic equipment. In 2007, Jeske H. et al.^[6] done a study on the usage of fixed and usual phones used by Anestheologists in the operating room, they found out that the fixed phones has less contamination of the bacteria than their usual phones. In that way, we can say that traditional cameras work as fixed phones which is not casually carried by the professionals and has different & less contamination than the usual mobile phones which is used by the healthcare professionals every day. Similarly, a study done in 2014 by Kumar B. et al.^[7] in Jazan province of Saudi Arabia and a study done by Shakthivel G. et al.^[8] in 2017 In India on mobile phones of healthcare setting, both showed that mobile phones carries so harmful bacteria like *E.coli*, *Klebsiella oxytoca*, *Staphylococcus aureus* that are antibiotic resistant, harmful to skin and some bacteria are resistant to Cefotoxin (MRSA).

Conclusions

As part of our daily dental practice, documentation is very important to avoid any legal issues about the patient or it is for our own benefit to understand the patient's mouth with closer view. The need for dental photography education is highly increased and dental assistant plays an essential part in infection control as well as in bringing high quality photographs, mobile devices usage and popularity has increased and they replace the role of the camera that's why quality has been compromised. Time is the main problem for not taking photographs as majority of the respondents are dental students and they have clinical requirements to finish so proper documentation of the patient through photographs often is compromised as well as they are not provided dental assistants with them so for time saving purposes they use mobile with

the verbal consent of the patient because the patients are not intimidated by the bulkiness of any heavy object like DSLR cameras

References

1. Cairns S. 3 steps to enhance your practice through dental photography. Dental Economics. 2016;106(7):28.
2. Foong YC, Green M, Zargari A, Siddique R, Tan V, Brain T, et al. Mobile Phones as a Potential Vehicle of Infection in a Hospital Setting. Journal of Occupational and Environmental Hygiene. 2015;12(10):D232-5.
3. Haron N, Zain RB, Nabillah WM, Saleh A, Kallarakkal TG, Ramanathan A, et al. Mobile Phone Imaging in Low Resource Settings for Early Detection of Oral Cancer and Concordance with Clinical Oral Examination. Telemedicine and e-Health. 2017;2016;23(3):192-9
4. Hammond BD, Romero MF, Haddock FJ. Digital dental photography, a picture is worth a thousand words, part 1. The Dental Assistant. 2016;85(2):6.
5. Altiparmakogullari Y, Cifter M, Cifter AS. A Multidisciplinary inspection of Dental Photography: What Do Dentist Think and What Can Designer Do? The Design Journal. 2017;20(sup1):S1989-97..
6. Jeske H-, Tiefenthaler W, Hohlrieder M, Hinterberger G, Benzer A. Bacterial contamination of anaesthetists' hands by personal mobile phone and fixed phone use in the operating theatre. Anaesthesia. 2007;62(9):904-6
7. Vinod Kumar B, Hobani YH, Abdulhaq A, Jerah AA, Hakami OM, Eltigani M, et al. Prevalence of antibacterial resistant bacterial contaminants from mobile phones of hospital inpatients. The Libyan journal of medicine. 2014;9(1):25451-4
8. Shakthivel PG, Velvzhi G, Sucilathangam G, Revathy C. Mobile Phones in Healthcare Setting: Potential Threat in Infection Control.

- Int. J. Curr. Microbiol. App. Sci. 2017;6(3):706-11.
9. Chander NG. Essentials of dental photography. Journal of Indian Prosthodontic Society. 2017;17(2):107-8.
 10. Davda M. CAN WE REALLY USE MOBILE PHONES FOR PROFESSIONAL DENTAL PHOTOGRAPHY? PART 1: THINK BEFORE YOUR "CLICKS". IDA Times [serial on the Internet]. (2016, June), [cited July 4, 2018]; 12(6): 19-20
 11. Davda M. "WHY DENTAL PHOTOGRAPHY IS AN INDISPENSIBLE PART OF DENTISTRY". IDA Times. 2016 May 1;12(5).
 12. Kohli S, Bhatia S. The Need for Dental Digital Photography Education. Australian Dental Journal. 2016;61(1):125-..
 13. Mani A, Sachdeva S, Anuraga S, Shukla P. Dental Photography. Pravara Medical Review. 2017 Mar 1;9(1).
 14. Parrish L, Sagun R, Hess SJ, Gaspard G, Chong C, Gruwell S. A Comparison of Three Camera Systems for Intraoral Photography. New York State Dental Journal. 2016;82(4):32.
 15. Sulejmani M. Contemporary Application Of Digital Photography In Dental Practice. Apolonia [serial on the Internet]. (2016, Dec)
 16. "Think Before Your Clicks Part 2." IDA Times, vol. 12, no. 7, July 2016, pp. 19-20.
 17. Vasileva R, Kolarov R, Nikolov N. Protocol for sterile conditions using dental photography. Medinform. 2017;3(1):551-8..
 18. Vasileva R, Petrova G, Kolarov R, Nikolov N. Informed consent in contemporary dental photography—ethics and law. Medinform. 2017;3(1):531-43.
 19. Wander P, Ireland RS. Dental photography in record keeping and litigation. British dental journal. 2014;217(3):133-7