

Use of Medical Photography Among Dermatologists and Plastic Surgeons in Saudi Arabia

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ABSTRACT

Background

The benefit of utilizing smart technologies for medical photography is apparent, however its safety concerns related to legal rights of practitioners and patients warrant attention.

Objectives

This study aimed to evaluate the use of medical photography among dermatologists and plastic surgeons in Saudi Arabia.

Methods

This cross-sectional study was conducted on 63 physicians (43 dermatologists, 20 plastic surgeons) using a 36-item multiple choice questionnaire on the use of medical photography. Data were analyzed using descriptive statistics, and two-tailed, Chi-square, and Exact tests.

Results: Medical photography was used by most of dermatologists (90.7per cent) and plastic surgeons (95per cent). More than three-fourths of them agreed that medical photography aids in enhancing clinical effectiveness and standard of care. Photography was done mostly to track disease progression for dermatologists (87.2per cent), and

for research and/or future publications for plastic surgeons (89.5per cent). The primary reason for exchange of photographs via email or text messages was for seeking second opinion and further recommendations from colleagues. Consent from patients before photographing was obtained by majority of both groups. 84.2per cent of plastic surgeons as compared to 59per cent of dermatologists had good awareness and adherence to workplace medical photography protocol (P=0.055).

Conclusion

Medical photography is commonly used both in clinical and academic practices for diagnostic, treatment and teaching purposes. Its value in enhancing medical care is agreed upon and the existence of workplace medical photography protocol is important. Consent from patients must be always acquired and stressed upon even with the absence of clear grounding regulations and protocols.

Key Words

Dermatologists, Photography, Surgeons.

Introduction:

For the past twenty years, medical photography has become prevalent. In 2015, Melam et al found that medical photography had been utilized by 99.3per cent of board certified dermatologist from 22 different states. Medical photography is found to be essential in certain specific specialties such as dermatology and plastic surgery as these have a highly visual nature compared to other fields^{1,2}. It has been used for monitoring the status and progress of a patient, education and research purposes, and to take recommendations from other colleagues³. Aside from the mentioned above, preoperative photographs under medical photography assist in surgical planning and provide a clear overview of a patient's perceptions and requests by comparing photographs before and after surgical operation. It allows both parties, the surgeon, and the patient, to visualize and evaluate the outcome of the procedure

accurately. Medical photographs are also a huge part of advertising and marketing⁴. With the advancement of technologies such as smart devices and medical applications, medical photography use has been expanding and increasing throughout the years. However, practitioners engaging in medical photography should always be reminded to stick to the ethical and medico-legal standards. In an Australian study, it was revealed that although 92per cent of the dermatologists obtained consent verbally from the patient, only 23per cent used security protective equipment for patient photography⁵.

In order to maintain safe use of such tools, guidelines must be developed to align common practices and maintain legal rights of practitioners and patients⁶. However, little is known about the existence of such guidelines in Saudi. Moreover, up to our knowledge, the frequency and pattern of use of medical photography among Saudi doctors had not been studied before.

Methods

This cross-sectional study was conducted using a 36-item multiple-choice questionnaire on SurveyMonkey, covering topics about medical photography in dermatology and plastic surgery including their views on the topic, method of photography, way of storage and exchange of photos between them. It was distributed through WhatsApp® to board certified plastic surgeons and dermatologists across Saudi Arabia. Responses from September to November 2020 were collected. The questionnaire was acquired from a reference study conducted in the United States about medical photography among dermatologists¹. It had been, then, modified to be applicable in Saudi Arabia and to include plastic surgeons. This study was approved by the ethical board from the research and studies department of Jeddah Health Affairs - Ministry of Health in Saudi Arabia (H-02-J-002).

Data analysis

Data analysis was conducted using SPSS version 22.0 (IBM Corp, Armonk, NY). After data collection, results were modified, coded, and entered to statistical software IBM SPSS version 22 (IBM Corp, Armonk, NY). All statistical analysis was done using two tailed tests. P value less than 0.05 was statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables including demographic data, and medical photography related data. Cross tabulation was used to test for the distribution of different demographic, clinical, and medical photography practice, uses, reasons and all other relevant data among the study groups (dermatologists vs. plastic surgeons). Pearson chi-square test was used to test

for relations significance. Exact tests were used to assess significant association due to small frequencies.

Results

The study included 63 physicians including 43 dermatologists and 20 plastic surgeons. 81.4per cent of dermatologists had a specialization in medical dermatology while 95per cent of plastic surgeons worked on aesthetic surgery. More female dermatologist were involved in the study compared to female plastic surgeon (53.5per cent vs. 30per cent) and majority of participants were consultants (83.7per cent of dermatologists and 95per cent of plastic surgeons). The rest of demographics can be seen in table 1. Data on Medical photography acquisition, method and frequency among study groups is shown on Table 2. Majority of dermatologists and plastic surgeons agreed that medical photography aids in enhancing clinical effectiveness and standard of care and more than one third of them are receiving daily images from patient (79.1per cent vs 95per cent and 39per cent vs 43per cent, respectively). The mode of image exchange was texting/WhatsApp for 69.8per cent of dermatologists and 60per cent of plastic surgeons. Twitter was also used as a medium for exchange by 18.6per cent of dermatologists and 5per cent of plastic surgeons. Secure mail was only used by 25per cent of plastic surgeons and never used by dermatologist ($p<.005$).

Regarding medical photography use, 90.7per cent of dermatologists and 95per cent of plastic surgeons mentioned using it at the time of the survey. Tracking progression of disease was the main reason of use in 87per cent of dermatologist while 89.5per cent of plastic surgeons used it for research and/or future publications. Interestingly, 41per cent of dermatologists and 89.5per cent of plastic surgeons were reported to use this for medico-legal purposes. Table 3 summarizes the finding of medical photography uses in both groups.

Smartphones were used by 94.9per cent of dermatologists and 84.2per cent of plastic surgeons for medical photographs. A secure smartphone application that synchronizes with electronic medical records was used by 24.3per cent of dermatologists compared to 43.8per cent of plastic surgeons. Password protected devices were used by both groups. 36.4per cent of dermatologists admitted having photos that showed identifiable features of patients vs 60per cent of plastic surgeons. The main reason of exchange of photography is to seek a second opinion from a colleague (23.1per cent of dermatologists and 31.6per cent of plastic surgeons). Table 4 summarizes the finding related to devices security and storage in medical photography.

Consent from patients was obtained by 74.3per cent of dermatologists (written in 51.2per cent) and 89.4per cent of

plastic surgeons (written in 65per cent). 84.2per cent of plastic surgeons and 59per cent of dermatologists were aware and adhered to workplace medical photography protocol. Only 10.3per cent of dermatologists and 36.8per cent plastic surgeons had undergone additional training in medical photography but the majority of both groups agreed that further education and training in medical photography is important (Tables 5 and 6).

Discussion

The visual nature of dermatology and plastic surgery fields has made medical photography extremely relevant in these specialties. Over 90per cent of the surveyed dermatologists and plastic surgeons were utilizing medical photography in clinical practice, and it was found to be most commonly used for educational/teaching purposes followed by disease progression tracking. In an American study, 61.8per cent of the dermatologists reported everyday usage of medical photography in comparison to 84.2per cent of our study responders¹. In addition, plastic surgeons in our study reported 94.7per cent usage of medical photography in almost every patient that had undergone surgery.

Privacy of patients must be greatly considered while conducting medical photography. Protection of privacy from the start by collecting consent from patients, as well as the mode of storage and the capability of photo sharing should be identified, and certain protocols must be established to achieve maximum efficiency of photography. Regardless of the workplace protocol, it was found that the population involved in this study reported adherence (67.2per cent in comparison to 23.7per cent of American and 22per cent of Australian study^{1,3}). The number of respondents that agreed on the importance of obtaining a consent was a majority of 79.3per cent.

The study among Mohs surgeons in United States suggested that only 4per cent of the respondents were able to produce a form of consent prior to the act of photo taking, including those that just preferred verbal consent over written consent⁷. In this study, 52.2per cent of dermatologists and 65per cent of plastic surgeons preferred written over verbal consent. This is not only done to clarify the reason behind the image acquisitions to the patients but also for them to have the ability keep the rights of their own photos and protect doctors legally.

The mode of exchange of images was done using texting/WhatsApp for 69.8per cent of dermatologists and 60per cent of plastic surgeons. WhatsApp, a messaging application, is widely popular in Saudi Arabia. With that, data is easily accessible through message exchanges in this application. Most clinical services are also utilizing WhatsApp to mainly facilitate communication among

colleagues even from across the world. However, this application was also found to have privacy issues⁸. This can result in leakage of patients' photos and jeopardizing their privacy

Technology greatly affects and influences all aspects of life nowadays. Particularly the use of smart devices including but not limited to the use of smart phones and tablets had become more frequent among people, even the ones that work in the medical field. In this study, 90per cent of the surveyed population simply used smart phones for medical photographs with 77per cent reporting usage of personal smartphones. It is reassuring that the used devices were password protected in both studied groups. There were also some studies in the US wherein participants mentioned they preferred a hospital-owned camera such as a digital camera over a smart phone and that patients preference must be taken into consideration⁹.

This study revealed that 36.4per cent of the dermatologists and 60per cent of the plastic surgeons used photos that showed identifiable features of the patients. This also provided that the images were taken in such way that they will not be identified by others, but in the case of specialties such as dermatology and plastic surgery, it sometimes cannot be overcome. For example, skin lesions on the face that makes it impossible to exclude identifying features in the photographs. Also, in some cases, the overall facial structures could be important in diagnosis and deciding the appropriate medical and surgical management plan⁵.

Many of the mentioned concerns in this article could be prevented by training doctors on the use of medical photography and its guidelines. Unfortunately, 81per cent of the respondents denied having training but 87.9per cent agree of them that further training is important.

With the use of medical photography nowadays, it is only valid that the guidelines shall be established to improve practice, more specifically in relation to consent gathering. It should have a proposed format of the consent, and the detailed instructions on how the patients' data will be handled and series⁹. The accessibility of these data must also be discussed in detail to ensure safety of data and compliance to data privacy. Images should also be limited to the use for teaching and research programs. A formal training can be suggested in order to standardize the technical and ethical aspects. With these, it will enhance the practice of medical photography providing better visualization and good compliance to data privacy leading to less liabilities.

Conclusions and Recommendation

Medical photography is a very useful clinical and educational tool and widely used among dermatologists and

plastic surgeons in Saudi Arabia. However, personal information and photos of patients are not securely handled. The development of clear medical photography guidelines, doctor's education on photography, obtaining routine patient consent and the use of the secured data for exchange of photography may maximize the benefit of this tool and overcome some of the concerns associated with it. This study is limited to general information on medical photography. Thus, this study suggests focusing more on the accurate measurement of response rate as results obtained in this analysis may also be affected by recall and selection bias. The study is also limited to low number of respondents, suggesting conducting further studies on a larger population to provide a bigger picture on awareness, knowledge, and utilization of medical photography among dermatologists and plastic surgeons.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

ETHICAL COMMITTEE APPROVAL

This study was approved by the ethical board from the research and studies department of Jeddah Health Affairs - Ministry of Health in Saudi Arabia (H-02-J-002)

Table 1: Personal characteristics of dermatologists and plastic surgeons sampled in the study

Personal characteristics		Total		specialization				P-value
				Dermatologist		Plastic surgeon		
		No	%	No	%	No	%	
Age in years	< 40 years	29	46.00%	22	51.20%	7	35.00%	0.231
	> 40 years	34	54.00%	21	48.80%	13	65.00%	
Gender	Male	34	54.00%	20	46.50%	14	70.00%	0.082
	Female	29	46.00%	23	53.50%	6	30.00%	
Category	Specialist	8	12.70%	7	16.30%	1	5.00%	0.211
	Consultant	55	87.30%	36	83.70%	19	95.00%	
Years of experience at specialization	5-Jan	6	9.50%	3	7.00%	3	15.00%	.483^
	10-Jun	18	28.60%	13	30.20%	5	25.00%	
	15-Nov	17	27.00%	13	30.20%	4	20.00%	

	16-20	5	7.90%	2	4.70%	3	15.00%	
	21+	17	27.00%	12	27.90%	5	25.00%	
Practice setting	Public educational hospital	43	68.30%	29	67.40%	14	70.00%	0.839
	Public non-educational hospital	15	23.80%	14	32.60%	1	5.00%	.017*^
	Private hospital	14	22.20%	5	11.60%	9	45.00%	.003*^
	Private clinic	26	41.30%	11	25.60%	15	75.00%	.001*^
Dermatologist sub-specialization	Medical dermatology	35	81.40%	35	81.40%	-	-	-
	Dermatopathology	4	9.30%	4	9.30%	-	-	-
	Cosmetic Dermatology	17	39.50%	17	39.50%	-	-	-
	Pediatric Dermatology	7	16.30%	7	16.30%	-	-	-
	Hair disorders	8	18.60%	8	18.60%	-	-	-
Plastic surgery sub-specialization	Hand surgery	6	30.00%	-	-	6	30.00%	-
	Burn surgery	7	35.00%	-	-	7	35.00%	-
	Craniofacial surgery	4	20.00%	-	-	4	20.00%	-
	Microsurgery	7	35.00%	-	-	7	35.00%	-
	Pediatric plastic surgery	6	30.00%	-	-	6	30.00%	-
	Breast reconstruction	12	60.00%	-	-	12	60.00%	-
	Aesthetic plastic surgery	19	95.00%	-	-	19	95.00%	-

P: Pearson X2 test

^: Exact probability test

*P < 0.05 (significant)

Table 2. Medical photography Acquisition, method, and frequency among study groups

Items	Total		Specialization				P-value
			Dermatologist		Plastic surgeon		
	No	%	No	%	No	%	
Pertaining to clinical/medical photography, with which of the following statements do you agree?							
Medical photography enhances clinical effectiveness and standard of care.	53	84.10%	34	79.10%	19	95.00%	0.107
Medical photography enhances patient satisfaction.	39	61.90%	22	51.20%	17	85.00%	.010*
Medical photography is a burden to the provider.	11	17.50%	8	18.60%	3	15.00%	0.726
Medical photography is a burden to the patient.	3	4.80%	3	7.00%	0	0.00%	0.226
Medical photography is a medico-legal liability to the provider.	33	52.40%	23	53.50%	10	50.00%	0.796
Identifiable photos (that include facial features, tattoos, or distinct hair, jewelry, or clothing) should have more stringent guidelines.	30	47.60%	17	39.50%	13	65.00%	0.06
Do you receive Electronic or Hard Copy of Image(s) from Patients?							0.985
Yes	44	69.80%	30	69.80%	14	70.00%	
No	19	30.20%	13	30.20%	6	30.00%	
How frequent do you receive Images from patient?							0.964
Daily	16	36.40%	10	33.30%	6	42.90%	
2 times/ week	12	27.30%	9	30.00%	3	21.40%	
Weekly	6	13.60%	4	13.30%	2	14.30%	

Monthly	6	13.60%	4	13.30%	2	14.30%	
Rarely	4	9.10%	3	10.00%	1	7.10%	

P: Exact probability test *P < 0.05 (significant)