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Patients' Perspectives and Preferences About Medical Photography in Dermatology: A Cross-Sectional Study

Dermatolojide Medikal Fotoğraflamaya Hastaların Bakışı ve Tercihleri: Kesitsel Bir Çalışma

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ABSTRACT Objective: With the increasing use of digital medical photography in the practice and delivery of dermatologic care, concerns regarding patient privacy and ethical-legal aspects have been raised. This study aims to assess the acceptance and perception of medical photography among Turkish patients attending dermatology clinics. **Material and Methods:** An opinion survey was conducted in two tertiary referral hospitals in İstanbul among adult patients visiting dermatology clinics by completion of a 13-question survey from. **Results:** A total of 357 patients completed the questionnaire, of whom a dermatologist had recently photographed 42.3%. Patients preferred to be photographed with a hospital-owned camera (69.5%) compared to the practitioner's personal camera (36.1%) or mobile phone (29.1%) (p<0.001). They favored hospital digital records (70%) over the practitioner's own computer (30.5%) or the practitioner's own mobile phone (19.9%) for the storage of the images (p<0.001). Patients accepted being photographed by their attending physician more than other healthcare workers (p<0.001). Non-identifiable photos were more acceptable than identifiable ones for all purposes of use of photographs, with the highest rate of acceptance for medical consultation (75.9%) and the lowest rate for medical websites (10.4%). Almost all respondents (97.2%) felt informed consent is necessary before medical photography. Nearly one-third of the respondents shared concern about the misuse or unauthorized access of their medical photographs. **Conclusion:** Our study revealed that patients have a relatively positive attitude toward medical photography, although they seem to have clear preferences regarding several practical aspects. These findings could be used to improve dermatological practice and to create policy guidelines about medical photography.

Keywords: Photography; dermatology; informed consent; ethics; surveys and questionnaires

ÖZET Amaç: Dijital tıbbi fotoğraflamanın, dermatolojik sağlık hizmetlerinin uygulanması ve sunulmasında artan kullanımı ile birlikte hasta gizliliğinin korunması ve medikolegal açılardan bazı endişeler ortaya çıkmıştır. Bu çalışma, dermatoloji kliniklerine başvuran Türk hastaların medikal fotoğraflamaya yönelik görüş ve tercihlerini değerlendirmeyi amaçlamaktadır. **Gereç ve Yöntemler:** Çalışmaya İstanbul'da bulunan 2 farklı 3. basamak sağlık kuruluşunun dermatoloji polikliniklerine başvuran erişkin hastalar dâhil edildi. Hastalardan 13 soruluk anket formunun doldurulması istendi. **Bulgular:** Çalışmaya toplam 357 hasta dâhil edildi, bunların %42,3'ü yakın zamanda bir dermatolog tarafından fotoğraflanmıştı. Hastalar medikal fotoğraflarının hastaneye ait bir fotoğraf makinesi ile çekilmesini (%69,5), hekimlerinin kişisel kamerası (%36,1) veya akıllı telefonu (%29,1) ile çekilmesine tercih ettiler (p<0,001). Çekilen görüntülerin saklanması için hastanelerin dijital arşivlerini (%70), hekimlerinin kişisel bilgisayarlarına (%30,5) veya akıllı telefonlarına (%19,9) tercih ettiler (p<0,001). Hastalar fotoğraflarının kendilerini takip eden hekim tarafından çekilmesini, diğer sağlık çalışanları tarafından çekilmesine göre daha kabul edilebilir buldular (p<0,001). Medikal fotoğrafların çeşitli amaçlar için kullanılmasında hastaların tanınabilir olmadığı fotoğraflar, tanınabilir olduklarına göre anlamlı olarak daha kabul edilebilir bulundu. Medikal fotoğrafların kullanım amaçları içinde en yüksek kabul oranı tıbbi konsültasyonlar (%75,9), en düşük kabul oranı ise internet siteleri (%10,4) içindi. Katılımcıların neredeyse tamamı (%97,2) tıbbı fotoğraflama öncesi aydınlatılmış onamın alınmasının gerekli olduğunu düşündü. Katılımcıların yaklaşık 1/3'ü tıbbı fotoğraflarının yanlış amaçlarla kullanımı ve istenmeyen kişilerin eline geçmesi ile ilgili endişe duyduklarını belirttiler. **Sonuç:** Çalışmamız, Türk hastaların medikal fotoğraflamaya karşı oldukça olumlu bir tutum sergilediğini ancak medikal fotoğraflama süreci ve sonrasına ilişkin bazı net tercihleri olduğunu ortaya koydu. Çalışmadan elde edilen bulgular, dermatoloji günlük pratiğini iyileştirmek ve bazı tıbbi fotoğraflama ile ilgili yasal yönergeler oluşturmak için kullanılabilir.

Anahtar Kelimeler: Fotoğraf; dermatoloji; bilgilendirilmiş onam; etik; sörveyler ve anketler

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Medical illustration has been a method used in medical practice since ancient times. The medical illustration process, which is thought to have started with the anatomical drawings made by DaVinci in the 15th century, gained a whole new dimension with the clinical photograph taken for the first time in the 19th century by Hill and Adamson.[1] In recent years, with the rapid advances in technology, digital medical photography has become an integral part of daily medical practice.

Nowadays, digital medical photography is used routinely as a noninvasive imaging technique for the management and follow-up of patients with skin problems and for pre-operative or pre-procedural preparations.[2-6] The images obtained are also widely used for patient consultations, educational and academic purposes, and scientific reporting.[7,8] The benefits and the simplicity of digital imaging have turned it into an everyday operation, especially for the medical specialties dealing with visible pathologies like dermatology, plastic surgery, and maxillofacial surgery.[3,9] A recently published questionnaire study on 153 board-certified dermatologists showed that 68% of them use digital photography daily in their practice, and nearly half (46%) use smartphone cameras for this purpose.[10]

The increasing use of digital medical photography raises concerns regarding ethico-legal aspects and patient privacy.[6,11-13] As patient photographs become easier to be captured, shared, and published, it is essential to obtain patient consent and consider how to archive and transfer medical images securely. Some guidelines and good clinical practice regulations have been developed for the use of medical photography in a clinical setting, though a standardized approach is mostly lacking among medical professionals.[12,14,15]

While using the medical and educational benefits of digital imaging, it is essential not to overlook patients' rights and expectations of privacy and confidentiality. With the growing interest in the topic, recently, there have been few publications exploring patients' perceptions of medical photography.[14,16,17] Their perception is possibly shaped by many factors, including cultural background, religion, age, and educational status.[18-20] Understanding how the patients feel or what they think about medical photography may help medical professionals to take a more sensitive approach to the task and minimize unintended ethico-legal consequences. Furthermore, it may provide evidence for developing and improving medical photography guidelines.

The present study aimed to assess the acceptance and perception of digital medical photography among Turkish patients attending to the dermatology clinics. Patients' preferences regarding several different aspects of digital photography, including patient consent, photography equipment and storage method were explored in detail.

MATERIAL AND METHODS

Study participants were recruited from patients at 2 dermatology outpatient settings in İstanbul: (1) İstanbul Training and Research Hospital and (2) Medeniyet University Göztepe Training and Research Hospital.

An anonymous questionnaire was designed by the authors of the study with questions adapted from previous studies to assess patients' perceptions about the use of medical photography in dermatology clinics.[14,16,17] A pilot study was conducted with 25 patients randomly selected at each hospital to ensure the clarity of the terminology and the readability by the patients, and then adequate revisions were made. The final self-administered questionnaire was a one-page form that included demographic data and 13 survey questions addressing the following topics:

1) Patients' general acceptance of medical photography for different medical purposes,

2) Their acceptance of the different photographing processes and equipment (who takes the photograph, with which equipment is the photograph taken),

3) Their acceptance for the different storage options,

4) Their perspectives on the informed consents and,

5) Their beliefs and concerns about medical photography.

The patients who completed the survey had appointments for either the first dermatology visit or a for a consecutive visit for a required skin biopsy. Per

protocol, all the patients who underwent a skin biopsy were photographed after obtaining written consent, and they were asked to fill out the questionnaire at the end of the process. Patients who had their first appointments in the outpatient clinic were asked to fill out the questionnaire at the end of the consultation. By doing so, we aimed to create a homogenous cohort containing patients with a recent experience with medical photography and patients with no experience with medical photography.

All of the study participants were adult patients (over 18 years of age) and gave their informed consent for participation in the study. The study was approved by the Ethics Committee of Clinical Researches (date: February 17, 2017; no: 948) and was performed in accordance with the guidelines of the Declaration of Helsinki.

STATISTICAL ANALYSIS

Data management and analysis were carried out using the computer software SPSS, version 24.0 (SPSS Inc., Chicago, IL, USA). Descriptive variables were expressed as mean±standard deviation, number (%), or median [quartile (Q1-Q3)]. The chi-square and Fisher's exact tests were applied to compare categorical variables. A p value <0.05 was considered statistically significant.

RESULTS

SAMPLE DEMOGRAPHICS

Three hundred fifty-seven consecutive patients completed the questionnaire, of whom 151 (42.3%) had recently been photographed by a dermatologist. Demographic characteristics and basic information of the respondents are summarized in Table 1. The majority of the respondents were female (57.1%). The mean age was 38.1 (±15.6), ranging from 18 to 78. More than half of the respondents (58.8%) were under 40, while individuals over 60 accounted for 11.5% of the sample. The majority reported having a high school (32.8%) or university level (30.5%) education.

Most respondents (85.7%) owned some form of a smartphone, and 60.2% regularly took pictures and/or selfies with their smartphones. Nearly one-third of the respondents (31.4%) reported taking pictures of their skin diseases or conditions if they have any. Among all respondents, 35.6% owned a personal camera.

TABLE 1: Demographic characteristics and basic information of respondent.

Variable	
Age, years	
Mean	38.1±15.6
Range	18-78
Age categories, n (%)	
18-29	134 (37.5)
30-39	76 (21.3)
40-49	54 (15.1)
50-59	52 (14.6)
≥60	41 (11.5)
Gender, n (%)	
Female	204 (57.1
Male	153 (42.9)
Education background, n (%)	
Literate only	4 (1.1)
Primary school	81 (22.7)
Secondary school	42 (11.8)
High school	117 (32.8)
University/college	109 (30.5)
Postgraduate degree	3 (0.8)
No answer	1 (0.3)
Previous experience with medical photography, n (%)	
Yes	151 (42.3)
No	206 (57.7)
Ownership of a personal camera, n (%)	
Yes	127 (35.6)
No	229 (64.1)
No answer	1 (0.3)
Ownership of a personal smartphone, n (%)	
Yes	306 (85.7)
No	51 (14.3)
The habit of taking selfies and/or pictures with a smartphone	
Yes	215 (60.2)
No	140 (39.2)
No answer	2 (0.6)
The habit of taking pictures of a skin disease or condition when they have any	
Yes	112 (31.4)
No	245 (68.6)
No answer	0 (0)

PATIENTS' ACCEPTABILITY OF MEDICAL PHOTOGRAPHY-RELATED FACTORS

Data for patients' acceptability of medical photography-related factors are listed in Table 2. Regarding

capturing equipment, most patients (69.5%) reported being comfortable with a clinic-owned camera, while only 36.1% and 29.1% accepted the practitioner's personal camera or mobile phone, respectively. This preference over the personal camera and mobile phone was highly significant (p<0.001).

Regarding the ways of storage of the taken images, an overwhelming majority (70%) preferred hospital digital records over the practitioner's own computer (30.5%) or practitioner's own mobile phone (19.9%) (p<0.001).

Most respondents (79.5%) were comfortable with being photographed by their attending practitioner, while a much smaller proportion would accept a nurse (38.3%) or other ancillary healthcare workers (23.5%) (p<0.001).

There were substantial differences regarding the preferences for the gender of the photographer between male and female respondents. Nearly half of the female respondents (49%) preferred a photographer of the same gender. In comparison, 81.0% of the male respondents indicated that the gender of the

TABLE 2: Patients' acceptability of medical photography-related factors.

Question		Frequency, n (%)	p value
Do you find it acceptable to be photographed with			
Hospital-owned camera	Yes	248 (69.5)	<0.001
	No	94 (26.3)	
	No answer	15 (4.2)	
The practitioner's own camera	Yes	129 (36.1)	
	No	179 (50.2)	
	No answer	49 (13.7)	
The practitioner's own mobile phone	Yes	104 (29.1)	
	No	200 (56.0)	
	No answer	53 (14.9)	
Do you find the following ways of storage of medical photographs acceptable			
In the hospital's digital records	Yes	250 (70.0)	<0.001
	No	91 (25.5)	
	No answer	16 (4.5)	
In the practitioner's own computer	Yes	109 (30.5)	
	No	192 (53.8)	
	No answer	56 (15.7)	
In the practitioner's own mobile phone	Yes	71 (19.9)	
	No	218 (61.1)	
	No answer	68 (19.0)	
Do you find it acceptable to be photographed by			
Attending practitioner	Yes	284 (79.5)	<0.001
	No	66 (18.5)	
	No answer	7 (2.0)	
Nurses	Yes	137 (38.3)	
	No	163 (45.7)	
	No answer	57 (16.0)	
Ancillary healthcare workers	Yes	84 (23.5)	
	No	210 (58.8)	
	No answer	63 (17.7)	
Should consent be obtained before medical photography			
No		10 (2.8)	-
Yes, oral consent is necessary		157 (44.0)	
Yes, written consent is necessary		164 (46.0)	
Yes, both oral and written consent is necessary		26 (7.2)	

TABLE 3: Patients' preferences regarding the gender of the photographer.

Preference for the gender of the photographer (single choice)	Gender of the participants		
	Male, n (%)	Female, n (%)	p value
Male	25 (16.3)	0 (0)	
Female	4 (2.6)	100 (49.0)	<0.001
Doesn't matter	124 (81.0)	104 (51.0)	

photographer did not differ for them (p<0.005) (Table 3).

Among all respondents, 44.0% indicated that written consent and 46.0% indicated that verbal consent was necessary before taking medical photographs, with 7.2% of respondents selecting both options. Only 2.8% of respondents felt that no consent was necessary.

PATIENTS' ACCEPTANCE OF THE USE OF PHOTOGRAPHS FOR DIFFERENT PURPOSES

With regard to the use of photographs for different purposes, non-identifiable photos were found to be significantly more acceptable than identifiable ones for all purposes (p<0.001) (Figure 1). For non-identifiable pictures highest rate of acceptance was for medical consultation (75.9%), followed by medical teaching (56.3%), medical meetings and conferences (32.5%), medical research and publication (29.7%) and medical websites (10.4%) in descending order.

PATIENTS' BELIEFS AND CONCERNS ABOUT MEDICAL PHOTOGRAPHY

Survey responders were asked to answer yes-no questions regarding their beliefs and concerns about medical photography, and the results are shown in Table 4. Most participants (80.7%) agreed that medical photography was essential for diagnosing and following up with their diseases. However, nearly one-third of the patients were either concerned about their photographs being accidentally obtained by people other than healthcare professionals (37.3%) or used for inappropriate purposes (35.3%). Of the patients, 35.9% indicated that they would like to see their taken images at the end of the consultation.

DISCUSSION

Medical photography is an essential tool and has extensively been used in the field of dermatology. This study revealed that most Turkish dermatologic patients have a relatively positive attitude toward medical photography. However, they express strong preferences for some photography-related factors.

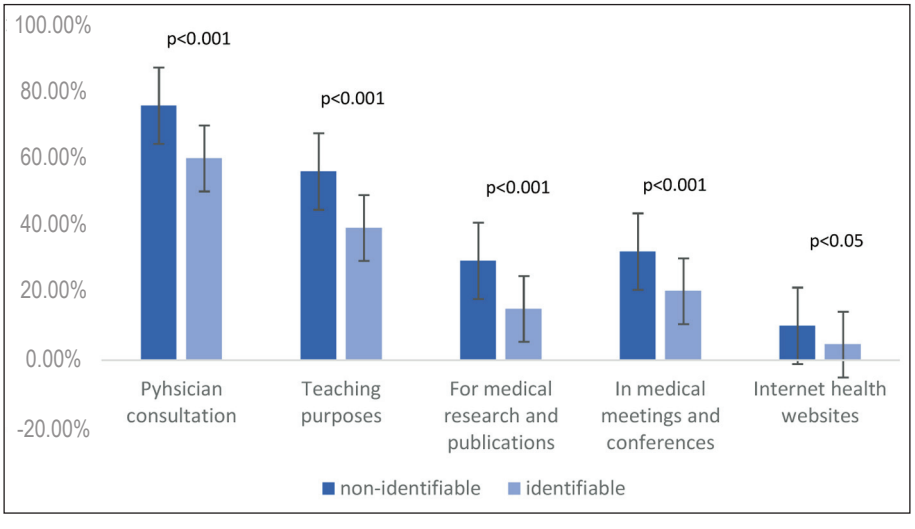

FIGURE 1: Patients' acceptance of the use of photographs for different purposes.
Graph demonstrating differences to patients' acceptance between identifiable and non-identifiable images for all purposes.

TABLE 4: Patients' beliefs and concerns about medical photography.

Statement on medical photography	"Yes" answers, n (%)
Medical photography is important the diagnosis of my disease and for follow-up and monitoring.	288 (80.7)
I am concerned about my photographs being accidently obtained by people other than the healthcare professionals.	133 (37.3)
I am concerned about my photographs being used for malicious purposes.	126 (35.3)
I would refuse medical photography, if I was sure that my refusal will not change my physician's attitude to me.	39 (10.9)
I would like to see the images at the end of the procedure.	128 (35.9)

In our survey, hospital photographic equipment was considered more acceptable than the practitioner's own camera or mobile phone. Moreover, the hospital digital records was the most accepted modality for storing the images. These findings align with previous studies, in which a higher level of acceptance was demonstrated for hospital-owned digital cameras and hospital digital records compared to physician-owned devices and storage methods.[4,14,17,21] The use of physicians' smartphone cameras was widely rejected in all studies, including ours. Such a strong preference may be due to the perceived security among patients. Patients seem to have concerns about image protection, patient confidentiality, and privacy. Concerning this issue, hospital-owned devices and storage methods may give the impression of professionalism. In a recent study, Lau et al. have hypothesized that the lack of access to hospital photographs after certain working hours may add another level of perceived security, compared to personal phones, which are available all the time, thus may raise unethical use of patients' digital medical records.[14] Despite these concerns, recent surveys among dermatologists revealed that 46% of the respondents use smartphone cameras for medical photography, and 32% store the images on personal portable devices.[10,22] Although smartphones can simplify the medical photographing procedure, patients' concerns and preferences must be addressed to build a solid doctor-patient relationship.

Similar to previous studies, our patients preferred their photographs to be taken by their attending physicians rather than by other healthcare staff.[16,17,23] This finding may reflect the fact that patients trust their physicians more than other healthcare staff. However, taking optimal medical images requires considerable time, and physicians may only sometimes be available for this task due to busy work schedules. Therefore, trained nonphysician personnel is usually needed in this setting. Patients might feel more comfortable if a badge identifying medical staff authorized to take photographs is worn, as suggested in the study of Hacard et al.[16] Furthermore, in our study, nearly half of the female respondents had a preference for a photographer from the same gender, while such a tendency was not detected in male respondents. We believe that our finding reflects culturally and religiously imposed gender biases, which might still be commonplace in countries such as Türkiye. In Leger et al. study, participants were found to be most comfortable with same-gender photographers, but further subgroup analysis was not realized according to the different genders.[17]

Patients' comfort level with digital photography was affected by the purpose of using the image and patients' identifiability. The acceptability rate was higher with the non-identifiable photographs for each purpose of use. Regarding this preference, we suggest that in the clinical setting, non-identifiable photographs should be taken whenever suitable. It is important to note that not just the photographs displaying a patient's face are considered identifiable, but also those displaying jewelry, tattoos, or specific scars. In line with previous studies, most patients approved their photographs used for medical consultations and teaching, while the acceptability rate decreased to only 10% for websites.[14,16,17] Although our study didn't address the acceptability of medical photography of different body parts, some recent studies revealed that genital and perineal lesions are less likely accepted to be photographed in both genders.[20,21] Authors conclude that this preference may

reflect the cultural perception that genitals are an intimate part of the body that requires privacy.

In our study, 97.2% of the respondents agreed that either oral or written informed consent should precede medical photography, with 44% preferring it to be in a written form. Although patients' preference for the need for consent is apparent, there are no recommended consent forms for medical photography in Türkiye, and each institute follows its own policies. Our study didn't explore patients' preferences about the need for separate consents for each mode of distribution, but in 2 recent studies, it was shown that nearly half of all respondents (47% and 44.9%) preferred to express their agreement separately for each purpose of use.[14,16] In accordance with the recent ethical guidelines and patients' preferences, we suggest that a national standardized consent form should be developed for medical photography, which allows the patient to choose how and where the photographs will be used. This approach may alleviate medico-legal risks.[12]

Previous studies have expressed concerns about the possibility of medical photography generating psychological distress in patients.[12,16,24] In our study, the vast majority of the participants considered medical photography useful to diagnose and to monitor their diseases. However, nearly one-third of them shared concerns about the misuse or unauthorized access to their medical photographs. A similar number of respondents also expressed their willingness to see taken images at the end of the consultation. These findings highlight the importance and need to take appropriate measures to protect patient privacy and confidentiality. Meanwhile, a survey study by Milam and Leger among board-certified dermatologists showed that physicians regularly text and e-mail patients' photographs and store identifiable images in non-secure locations or without added safety parameters.[10] Some of these concerns may be easily addressable by developing and following national and international good practice guidelines, focusing on clear and easy-to-implement image safety standards. If patients are detailly informed about those security measures beforehand, they may feel more comfortable with medical photography.

This study is not without limitations, as expected in any patients' opinion survey. The survey was undertaken in 2 different tertiary referral hospitals in İstanbul, and the results can not entirely represent all types of medical institutions and geographic locations. Another limitation is the potential for inherent bias. Answers may have been influenced by the relationship with the practitioners, the patient's history, understanding of the questions, and willingness to express opposing viewpoints.

CONCLUSION

In conclusion, this is the first study assessing the perception and acceptability of medical photography in Turkish dermatologic patients. The survey has cleared up patients' preferences in the medical photography process. Healthcare providers and regulatory bodies must consider the patients' preferences while formulating policies, consent forms, and additional guidelines about medical photography.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Sümeyre Seda Ertekin, Asude Kara Polat, Mehmet Salih Gürel;* ***Design:*** *Sümeyre Seda Ertekin, Mehmet Şimşek, Müge Göre Karaali;* ***Control/Supervision:*** *Filiz Cebeci Kahraman, Mehmet Salih Gürel;* ***Data Collection and/or Processing:*** *Sümeyre Seda Ertekin, Mehmet Şimşek, Asude Kara Polat, Müge Göre Karaali, Filiz Cebeci Kahraman;* ***Analysis and/or Interpretation:*** *Sümeyre Seda Ertekin, Mehmet Salih Gürel;* ***Literature Review:*** *Sümeyre Seda Ertekin, Müge Göre Karaali;* ***Writing the Article:*** *Sümeyre Seda Ertekin;* ***Critical Review:*** *Filiz Cebeci Kahraman, Mehmet Salih Gürel.*

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