

Pekar Joanna, Skolarczyk Justyna, Pekar Piotr, Nieradko Iwanicka Barbara. The use of pictures and videos showing dermal and mucosal symptoms by patients in medical practice. *Journal of Education, Health and Sport*. 2018;8(6):20-25. eISSN 2391-8306. DOI <http://dx.doi.org/10.5281/zenodo.1250319> <http://ojs.ukw.edu.pl/index.php/johs/article/view/5502>

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part b item 1223 (26/01/2017).
1223 Journal of Education, Health and Sport eissn 2391-8306 7

© The Authors 2018;

This article is published with open access at Licensee Open Journal Systems of Kazimierz Wielki University in Bydgoszcz, Poland

Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license

(<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.
The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 05.04.2018. Revised: 10.04.2018. Accepted: 21.05.2018.

The use of pictures and videos showing dermal and mucosal symptoms by patients in medical practice

Joanna Pekar¹, Justyna Skolarczyk¹, Piotr Pekar²,
Barbara Nieradko Iwanicka³

Joanna Pekar¹, asia9384@o2.pl, 0000-0002-4993-9276

Justyna Skolarczyk¹, justconsolida@gmail.com, 0000-0002-1678-6154

Piotr Pekar²,

Barbara Nieradko-Iwanicka³, bnieradkoiwanicka@wp.pl,

¹Students' Scientific Association at the Chair and Department of Hygiene, Medical University of Lublin

²Lublin University of Technology

³Chair and Department of Hygiene, Medical University of Lublin

Introduction. Diagnostic imaging is an extremely important step towards making the final diagnosis of many diseases. Among the criteria of numerous diseases are cutaneous or mucosal changes, which occur paroxysmal and persist for a short time. Currently, patients are increasingly using technological progress and they document such changes with the help of mobile phone cameras.

Purpose of work. The aim of the study was to determine whether patients turn to doctors with photographs or videos documenting their symptoms and whether it is useful in making the final diagnosis.

Material and methods. The research method was a questionnaire constructed by authors of the article, which was answered by 107 doctors employees of the Medical University of Lublin and the Medical University of Bialystok. Participation in the study was voluntary and anonymous.

Results. 75 (70%) of the respondents admitted that the patients brought them photos and videos documenting their symptoms. 73 (68%) of respondents considered them useful in making final diagnosis of diseases. Pictures and videos of head were shown to the doctors by 39 (36%) patients, pictures of neck by 30 (28%), pictures of upper limb by 37 (34%), pictures of lower limb by 39 (36%), pictures of chest by 38 (35%), pictures of stomach by 26 (24%) patients, pictures of pelvis by 26 (24%) patients, pictures of the back by 12 (11%), pictures of nails by 7 (6.5%), pictures of hair by 5 (4.6%) and pictures of eyes by 7 (6.5%) patients.

Conclusions. Documenting short lasting dermal and mucosal symptoms by patients in the form of self photographs or films is a new tool that can help doctors in finding the right diagnosis.

Key words: Telemedicine, picture, mobile phone

Introduction

Imaging diagnostics is an important tool that helps the physician in making final diagnosis of many diseases. Among the criteria of numerous diseases there are dermatological changes, which occur periodically and persist for a short time, e.g. in Schönlein-Henoch purpura. During the patient's visit at the doctor's office, such symptoms may be absent. Increasingly, patients benefit from modern technologies and document such changes with the use of cameras or smartphones. Moreover, there is more and more interest in telemedicine and the possibility of assessing a patient at a distance based on the results of laboratory tests and images sent via the Internet.

It has been shown that thanks to telemedicine it is possible to have easier access to experienced specialists in regions where they are missing, which allows, for example, a better choice of antibiotics and minimizing the risk of antibiotic resistance [1].

Purpose of work

The aim of the study was to determine whether patients turn to doctors with photographs or videos documenting their symptoms and whether it is useful in making the final diagnoses.

Material and methods

The research method was a questionnaire constructed by authors of this article, which was sent electronically to doctors employees of the Medical University of Lublin and the Medical University of Bialystok. Participation in the study was voluntary and anonymous. In the questionnaires doctors provided information about their specialty and gave answers to questions whether patients brought them photos and videos documenting their symptoms and whether it was useful. In addition, each doctor could choose from the drop-down list which areas of the patient's body were most often presented to him or her in photographs. A total of 2250 questionnaires was sent out in November 2017. Finally 107 filled in questionnaires (4.75%) were received.

Results

Among the respondents, the largest group of specialists were specialists in gynecology and obstetrics (11), internal medicine (10), medical rehabilitation (7), and endocrinology (7). Moreover, there were 5 rheumatologists, 5 neurologists, 5 oncologists, 5 radiologists, 5 pulmonologists, 4 specialist in orthopedics, 4 maxillofacial surgeons, 4 anesthesiologists, 4 nuclear medicine specialists, 3 general surgeons, 3 pediatricians, 3 allergologists, 2 dermatologists, 2 specialists in genetics , 2 angiologists, 2 family doctors, 2 psychiatrists and few doctors of other specialties among the respondents. As much as 75 (70%) of respondents admitted that patients brought them photographs and videos documenting their symptoms (Fig.1.).

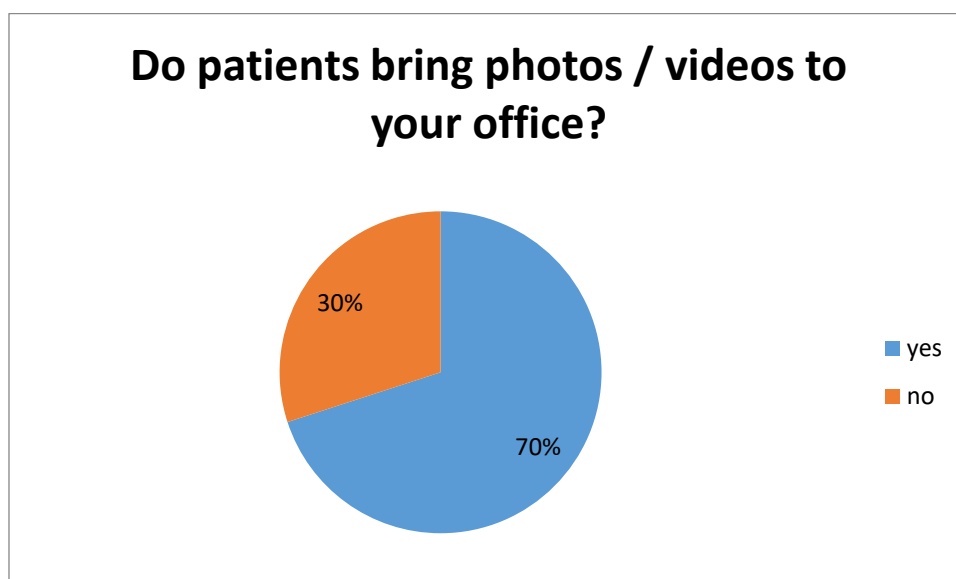


Fig.1. Percentage of doctors admitting, that patients used to bring the photos / videos of their symptoms.

As many as 73 (68%) of respondents considered patients' photos and videos useful in making diagnosis. This opinion was shared by 97.33% of doctors, who saw photos taken by patients showing symptoms. Pictures and videos showing the head were shown by 39 (52%) patients, neck 30 (40%), upper limb 37 (49.3%), lower limb 39 (52%), chest 38 (50.6%), abdomen 26 (34.7%), pelvis 26 (34.7%) , back12 (16%), nails 7 (9.3%), hair 5 (6.6%) and eyes 7 (9.3%) of patients (Fig.2.).

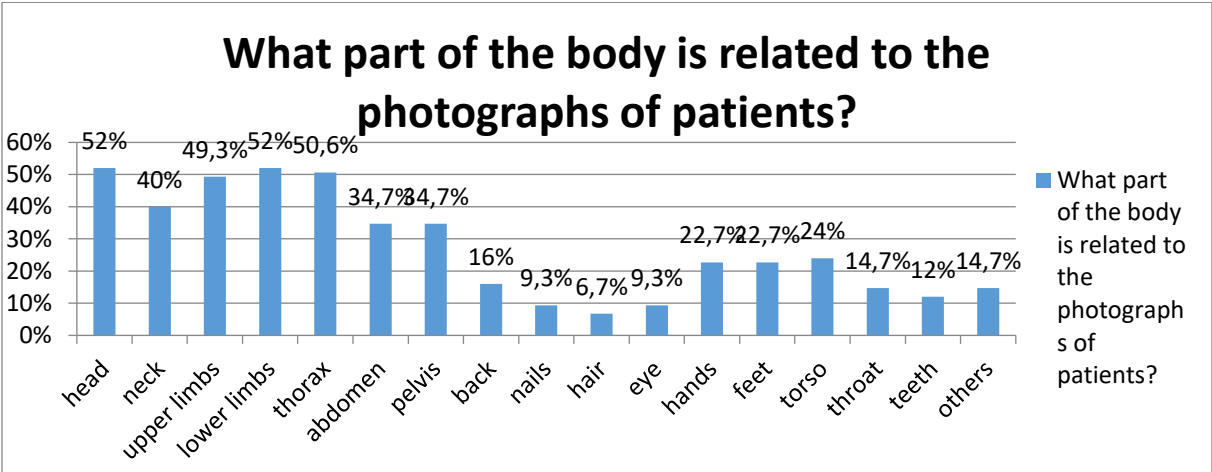


Fig.2. Parts of the body depicted in pictures/videos shown to doctors.

Discussion. The Pub Med database was searched using keywords: mobile phone, diagnosis, telemedicine, picture, statement, diagnosis. In total 9 scientific articles corresponding to these keywords were found. De Heide et al. carried out a study to check whether patients were able to send the doctor photos of their post-operative wounds and whether it was possible to correctly interpret the submitted images. A total of 46 patients were enrolled in this study, 83% of them were able to send pictures at the appointed time, and 88% of the images which were sent were interpretable [2]. Kaliyadan et al. assessed the credibility of images sent for interpretation to doctors. In their study, a dermatologist was diagnosing a patient during a face-to-face visit. After this visit, with the consent of the patient, the doctors sent pictures of the skin changes of the patient to their colleagues dermatologists for evaluation. The effectiveness of the diagnoses made only on the basis of the received photos was 95% (photos of 143 patients were evaluated). Diagnostic compliance varied depending on the disease [3]. In a larger study, Weingast et al. obtained worse results: 61% of patients were able to be diagnosed on the basis of photographs taken by them, and the correct diagnosis depended largely on the quality of the taken pictures. Approximately 80% of the diagnoses were the same as the diagnosis of the doctor examining the patient face to face. In this study, 15 dermatologists evaluated photos of 299 patients, which resulted in 2893 diagnoses based on photographs [4]. The otolaryngologists also studied the

usefulness of photos brought to the doctors' offices by patients. Doctors from the weekly ear-nose-throat emergency clinic took pictures of patients with nasal bone injuries and sent them to an experienced senior member of the team for interpretation. Doctors on the basis of patient's photographs assessed whether intervention in the form of manipulation of nasal bones was required. The results were compared to the actual assessment and management at the clinic. A total of 50 patients were consulted in this way. Finally 94% of the assessments on the basis of the photographs agreed with the doctors' treatment in the clinic [5]. The transmission of images of post-operative wounds was also used by children's neurosurgeons. Pirris et al. published 3 case reports, in which the pictures of wounds of patients obtained from their parents were helpful in the process of treatment [6]. Sikka et al. conducted a study in which the doctor first assessed the images of wound brought by the patient and then assessed the wound in person. A total of 94 patients participated in the study. Approximately 87% of the decisions were the same. The discrepancies in ratings were caused by poor image quality and incorrectly photographed wound. In 3 patients the decision about the procedure had to be changed due to a medical history, and in 1 case the picture looked worse than the actual injury. A questionnaire on the quality of the images received was made, where 1 is the worst quality of the photo and 10 the best. The median rate of the quality of images was 6 [7]. In scientific research, it was also attempted to assess skin tumors based on photographs taken by applying a dermatoscope to the camera lens. After exclusion of inadequate images 104 of 113 skin tumors were suitable for evaluation. With regard to detailed diagnoses, the clinical picture was better because 16 incorrect diagnoses were obtained. Scientists believed, that clinical image tele-evaluation may be the method of mobile tumor screening [8]. Pérez et al. developed a system based on mobile phones with built-in cameras for the postoperative management of patients. Forty nine patients benefited from it and it was positively evaluated by them, and 96% of patients were completely satisfied with the comments received by the telephone application [9].

Conclusions. Documenting the short-lasting symptoms of diseases, that appear on the skin and mucous membranes by patients in the form of photographs or films is a new tool, that can help doctors in finding the right diagnosis. However, it is necessary to think about uniform methods for authentication of these images and criteria, that should be taken into account when comparing the patient's appearance in the doctor's office and in the selfie.

References

1. Dos Santos RP, Dalmora CH, Lukasewicz SA, Carvalho O, Deutschendorf C, Lima R, Leitzke T, Correa NC, Gambetta MV. Antimicrobial stewardship through telemedicine and its impact on multi-drug resistance. *J Telemed Telecare*. 2018 Jan 1:1357633X18767702. doi: 10.1177/1357633X18767702.
2. de Heide J, Vroegh CJ, SziliTorok T, Gobbens RJ, Zijlstra F, Takens-Lameijer M, Lenzen MJ, Yap SC, Scholte Op Reimer WJ. Get the Picture: A Pilot Feasibility Study of Telemedical Wound Assessment Using a Mobile Phone in Cardiology Patients. *J CardiovascNurs*. 2017 Mar/Apr;32(2):E9-E15. doi: 10.1097/JCN.0000000000000377.
3. Kaliyadan F, Amin TT, Kuruvilla J, Ali WH. Mobile teledermatology--patient satisfaction, diagnostic and management concordance, and factors affecting patient refusal to participate in Saudi Arabia.*J Telemed Telecare*. 2013 Sep;19(6):315-9.
4. Weingast J, Scheibböck C, Wurm EM, Ranharter E, Porkert S, Dreiseitl S, Posch C, Binder M.A prospective study of mobile phones for dermatology in a clinical setting. *J Telemed Telecare*. 2013 Jun;19(4):213-8.
5. Barghouthi T, Glynn F, Speaker RB, Walsh M. The use of a camera-enabled mobile phone to triage patients with nasal bone injuries.*Telemed J E Health*. 2012 Mar;18(2):150-2.
6. Pirris SM, Monaco EA 3rd, Tyler-Kabara EC. Telemedicine through the use of digital cell phone technology in pediatric neurosurgery: a case series. *Neurosurgery*. 2010 May;66(5):999-1004.
7. Sikka N, Pirri M, Carlin KN, Strauss R, Rahimi F, Pines J. The use of mobile phone cameras in guiding treatment decisions for laceration care. *Telemed J E Health*. 2012 Sep;18(7):554-7
8. Kroemer S1, Frühauf J, Campbell TM, Massone C, Schwantzer G, Soyer HP, Hofmann-Wellenhof R.Mobile teledermatology for skin tumour screening: diagnostic accuracy of clinical and dermoscopic image tele-evaluation using cellular phones.*Br J Dermatol*. 2011 May;164(5):973-9.
9. Pérez F, Montón E, Nodal MJ, Viñoles J, Guillen S, Traver V.Evaluation of a mobile health system for supporting postoperative patients following day surgery.*J Telemed Telecare*. 2006;12 Suppl 1:41-3.