Teledermatology in Times of COVID-19 Confinement: Comparing Patients’ and Physicians’ Satisfaction by the Standardized Brest Teledermatology Questionnaire

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Abstract

The French government imposed the first COVID-19 pandemic lockdown from March 17 until May 11, 2020. Only emergency cases and teledermatology (TD) were allowed in outpatient settings. A standardized questionnaire was developed to compare the satisfaction level of patients and their treating physicians. Our main question was whether the patients would perceive TD as a valid alternative for direct physical face-to-face consultation. Eighty-two patients and their 4 treating dermatologists from one dermatology department participated in the study (43 females, 39 males) with a mean age of 46.6 years (SD ±23.9). The reason for TD was a chronic disease in the majority (87.8%), and mainly as a follow-up (96.3%). Regarding satisfaction, almost all categories rated around 9 on a 0–10 verbal analogue scale. The same level of global satisfaction could be seen between the patients and the physicians as well as for the quality of the patient-physician relation and whether all questions could be addressed during the TC. Physicians showed significantly higher scores than patients only for the category of “length” of the consultation. Gender, age, as well as distance between the clinic and home of the patient were not influencing factors for satisfaction. Regarding the technical parameters, the evaluation was mostly comparable for patients and physicians, but overall lower than the relational satisfaction parameters, especially for image quality. Patients were significantly more motivated to continue the TD after the lockdown than their treating dermatologists. We see an interest for implementing TD in specialized centers with chronic patients coming from remote places for regular follow-ups. TD cannot replace in-person patient-physician interaction, but was helpful during the lockdown. As a result, TD might become part of dermatology training to prepare for future lockdown situations.

Introduction

Due to the COVID-19 pandemic, the French government imposed a shutdown of the country from March 17 until May 11, 2020. This included a halt of regular clinical outpatient activities. Only emergency cases and teledermatology (TD) were allowed with a reduction of patient-physician contacts by more than 90% for outpatients in our department. TD was carried out by means of a video system, telephone calls, and E-mail (including pictures).
So far, studies evaluating TD as a pathway for patient-physician interaction have mainly studied the technical quality of TD, security, and reimbursement aspects [1]. Recently, TD was used in the follow-up of acne patients during the COVID-19 crisis in Italy [2]. A review analyzed the use of TD in melanoma [3]. The use of TD during COVID-19 was discussed in several publications [4–6]. Since the patients’ perspective on patient-physician interaction is part of recent research, including telehealth [7–10], we developed the standardized Brest Teledermatology Questionnaire (BTQ). The aim was to evaluate the acceptance of imposed TD in times of COVID-19 lockdown. The French health system allowed reimbursement of TD during the COVID-19 lockdown. Before lockdown, TDs were infrequently used because of legal restrictions.

The BTQ was developed during the time of COVID-19 lockdown when the regular consultations for outpatients were postponed. In order to maintain the possibility for patients to be in touch with our department (dermatology), a phone and videoconference system was established in combination with E-mails. The aim of the study was to better understand interaction during a TD as a tool in times of crises (COVID-19).

The following questions should be answered:

i. How do patients perceive TD as an alternative for direct physical face-to-face consultation?

ii. How could this system be improved?

iii. Is this system acceptable after the lockdown period?

iv. Is patient perception regarding the TD quality in accordance with the perception of the treating physician?

Materials and Methods

Brest Teledermatology Questionnaire

It was intended to test the following hypothesis: (a) the global satisfaction differs between patients and physicians, and the evaluation scores of both groups are correlated; (b) global satisfaction differs between age groups; (c) global satisfaction of the patients is influenced by the distance between the clinic and the home of the patients; (d) satisfaction with the length of TD is higher for physicians than for patients.

We developed the standardized BTQ to: (i) assess sociographic data, motivation for the TD, the technical quality, the category of the referring physician (or self-referral), and whether the TD was the first contact with the department or a follow-up; (ii) the central part consisted of 4 items regarding global satisfaction, physician-patient relationship, duration of the TD, and whether all medical questions were addressed; (iii) finally, we asked the patients whether they would be interested in continuing the TD (English version; see online suppl. material S1; for all online suppl. materials, see www.karger.com/doi/10.1159/000514029. German and French versions are available upon request).

Statistical Methods

The data were analyzed with Prism 6.0 (GraphPad, USA). Normal distribution was tested using the D’Agostino-Pearson test. Since almost all parameters did not show a normal distribution, we carried out pairwise comparisons with a Mann-Whitney test for unpaired samples. In the case of three or more groups to be compared we selected the Kruskal-Wallis test, and in the case of a positive result alpha-adjusted subsequent pairwise comparison was deployed. For testing the distribution in contingency tables, \( \chi^2 \) tests were performed. The significance level was set at \( p < 0.05 \). Values are given as the absolute number of patients or as the percentage of the respective group. Variance was calculated as the standard deviation (SD).

Results

Sociographic Data

Eighty-two patients participated in the study (43 females, 39 males) with a mean age of 46.6 ± 23.9 years. Female patients had a mean age of 44.5 ± 26.7 years, while male patients were slightly older (49.0 ± 20.5 years) without showing significant differences (\( p = 0.2779 \)). We sort-
ed the population into 4 age groups for further analysis (<18, 18–39, 40–59, >60 years). For underaged patients, the parents answered the interview questions. Female patients had a slightly higher representation in the group aged <18 years and an underrepresentation in the group aged 18–39 years, but did not present significantly different distributions ($\chi^2$ test $p = 0.2978$).

The travel distance for the patients from their homes to the hospital was divided into 3 categories: <10 km, which covers the city of Brest and its suburbs ($n = 24$), 10–50 km, which is the close region within approximately 1 h of driving ($n = 30$), and >50 km, corresponding to a larger driving distance of up to 590 km ($n = 27$; 1 answer missing).

### Reasons and Referral for Consultation

The majority reason for a TD was a chronic disease ($n = 72$; 87.8%). In 7.3% ($n = 6$) the reason was an acute skin problem, and 4 patients (4.9%) were seen for unknown diseases. The vast majority of the patients (96.3%; $n = 79$) had their TD for follow-up reasons. The referral
to our hospital was by general practitioner in 30.5% \((n = 25)\), by dermatologists from private practice in 28.0% \((n = 23)\), by dermatologists from other clinics in 4.9% \((n = 4)\), by other specialists in 14.6% \((n = 12)\), and by self-referral in 18.3% \((n = 15)\). Three patients gave no indication about their referral source \((3.7\%)\).

Satisfaction Parameters
The global satisfaction (Fig. 1) was assessed according to patients versus physicians (Fig. 1a), by age (Fig. 1b), and by distance between the clinic and the home of the patients (Fig. 1c). No significant difference could be detected in these group comparisons. However, the global satisfaction of patients and physicians showed a significant correlation \((p = 0.0331)\). All scores were almost at 9 or above 9 in the 0- to 10-point scale, indicating a mutual high general satisfaction both in patients and physicians.

Patient-physician relations were reported to be highly satisfactory, with score values above 9 (Fig. 2a) and no significant difference on either side \((p = 0.7261)\). The satisfaction with the length of the consultation (Fig. 2b) was rated significantly higher \((p = 0.0021)\) by physicians than by patients. The issue of whether “all medical questions were addressed” (Fig. 2c) was rated half a point higher by physicians than by patients, without reaching statistical significance \((p = 0.3464)\).

The quality of image, sound, and connection for the TD was evaluated equally for patients and physicians (Fig. 3). Fifty patients used the telephone connection only, 20 used video, and 12 used telephone plus e-mail. Image quality was rated lower by physicians (by almost 1 point), without reaching statistical significance \((p = 0.1298)\). No age-related difference in the analysis of the sound was detectable \((p = 0.2928;\) data not shown). It has to be noted that not all patients and physicians completed all items in this category since not all used video images. In the image quality category, an overall lower satisfaction score of around 6–7 was noted. No differences between male and female patients were revealed in any of the analyzed parameters \((\text{data not shown})\).

TD in Future Patient-Physician Interaction
Patients reported significantly more often \((44\%)\) than physicians \((13\%)\) that they would be interested in a future TD \((\chi^2 \text{ test } p < 0.0001)\). Thirty-four answers were missing in the physician group, thus the percentage values for each group were used to calculate the \(\chi^2\) test.

Discussion
Sociographic data showed a similar distribution for male and female patients. The age distribution was comparable to the regular population in the outpatient clinic. The vast majority of the patients were already known to the department and were suffering from chronic disease. Approximately a third of the patients came from areas as far as 590 km away from the clinic. The referrals came from dermatological specialists, general practitioners, other specialties, and self-referrals.

The tested hypothesis regarding the satisfaction parameters of global satisfaction, patient-physician relation, and length of the TD could be answered as follows: (a) the global satisfaction was not different between pa-
patients and physicians and the evaluation scores of both groups were significantly correlated; (b) the global satisfaction did not differ between different age groups, between patients and physicians, or between male and female patients; (c) there was no impact of the physical distance between the clinic and the home on the global satisfaction of the patients; (d) the satisfaction with the length of the TD was significantly higher for physicians than for patients.

The technical part of the TD showed overall lower satisfaction scores. This is indicative of the need for safe connection modalities that offer a good visual connection and good clinical images to allow for an adequate visual evaluation. Regarding the image quality, the physicians were less satisfied than the patients. The evaluation of the sound quality revealed lower scores for the patients compared to the physicians (as a trend); however, the patient subgroup analysis did not reveal any differences based on age group, which might have been the case for elderly patients with hearing problems.

This is, to our knowledge, one of the first studies evaluating TD regarding the comparative satisfaction of patients and their treating physicians, and more specifically in the context of the COVID-19 lockdown. The collected data indicated a very high satisfaction of both patients and their physicians. In general, both patients and physicians were very satisfied with the interaction-related parameters. The technical quality still needs to be improved. Before the lockdown, TDs were rarely performed in our department because of legal restrictions. We see an indication for TD in specialized centers with chronic patients located in remote places for regular follow-ups. It seems to be important to develop skills that demonstrate patient-centered relationship building [7]. In our opinion TD cannot completely replace direct patient-physician interaction in person.

An online survey among dermatologists analyzed hesitancy, limitations, merits, and the demographic of dermatologists using telemedicine [11]. The authors concluded that while telemedicine in dermatology might not fully replace physical consultation, but it could serve in a supportive role in times of crisis, provided adequate regulatory measures are in place. TD might also become part of dermatology training in order to be prepared for future lockdown situations.

**Key Message**

Teledermatology is a valid alternative for direct physical face-to-face consultation, especially in times of pandemic crisis.

**Statement of Ethics**

Patients gave oral informed consent to the publication of their anonymized data. The present study is in accordance with the legal framework of the CHRU Brest and as a questionnaire study is exempt from ethical approval.

**Conflict of Interest Statement**

J.W.F. – speaker and/or consultant for: Galderma, Sebapharma, Courage & Khazaka, B. Braun, Expanscience. L.M. – speaker and/or consultant and/or research for: Abbvie, Almirall, Amgen, Bioderma, BMS, Clarins, Flexio, Expanscience, Galderma, Incyte, Janssen, Johnson & Johnson, Leo, Lilly, Menlo, Novartis, Pfizer, Pierre Fabre, Sanofi, Trevi, UCB. All other authors have no conflicts of interest to declare.

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**Author Contributions**

J.W.F. and L.M. designed the study. A.G., D.L., E.B., C.A. and L.M. performed the calls with patients or teledermatology consultations. J.W.F. and H.A. performed the data analysis. All authors contributed to the manuscript.

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