Rural and Remote Health rrh.org.au
James Cook University ISSN 1445-6354

ORIGINAL RESEARCH

Patient consultations during SARS-CoV-2 pandemic: a mixed-method cross-sectional study in 16 European countries

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PUBLISHED

19 October 2022 Volume 22 Issue 4

HISTORY

RECEIVED: 6 October 2021

REVISED: 5 August 2022

ACCEPTED: 5 August 2022

CITATION

Petrazzuoli F, Gokdemir O, Antonopoulou M, Blahova B, Mrduljaš-Đujić N, Dumitra G, Falanga R, Ferreira M, Gintere S, Hatipoglu S, Jacquet J, Javorská K, Kareli A, Mohos A, Naimer S, Tkachenko V, Tomacinschii A, Randall-Smith J, Kurpas D. Patient consultations during SARS-CoV-2 pandemic: a mixed-method cross-sectional study in 16 European countries. Rural and Remote Health 2022; 22: 7196. https://doi.org/10.22605/RRH7196

ABSTRACT:

Introduction: Remote consultations help reduce contact between people and prevent cross-contamination. Little is known about the changes in consultation in European rural primary care during the SARS-CoV-2 (COVID-19) pandemic. The purpose of this mixed-methods cross-sectional study was to find out more about the effects of the pandemic on changes in patient consultations in European rural primary care.

Methods: A key informant survey from 16 member countries of the European Rural and Isolated Practitioners Association (EURIPA) was undertaken using a self-developed questionnaire. The steering committee of this project, called EURIPA Covid-19 study, developed a semi-structured questionnaire with 68 questions, 21 of which included free-text comments. Proportions were calculated for dichotomized or categorized data, and means were calculated for continuous data. Multivariate analysis by logistic regression model was used to assess the association of multiple variables.

Results: A total of 406 questionnaires from primary care providers (PCPs) in 16 European countries were collected; 245 respondents (60.5%) were females, 152 PCPs were rural (37.5%), 124 semi-rural (30.5%). Mean age of the respondents was 45.9 years (standard deviation (SD) 11.30) while mean seniority (length of experience) was 18.2 years (SD 11.6). A total of 381 (93.8%) respondents were medical doctors. Significant differences were found between countries in adopting alternative arrangements to face-to-face consultation: remote teleconsultation is well appreciated by both healthcare professionals and patients, but the most common way of remote consultation remains telephone consultation. A factor significantly inversely associated with the adoption of video consultation was the seniority of the PCP (odds ratio 1.19, 95% confidence interval 1.02–1.40, p=0.03).

Conclusion: Telephone consultation is the most common form of remote consultation. The adoption of video-consultation is inversely related to the seniority of the informants.

Keywords:

access to care, consultation, COVID-19, primary care, telemedicine, telephone consultation.

FULL ARTICLE:

Introduction

The early stages of telemedicine

'Telemedicine involves the use of telecommunications and virtual technologies to provide health care outside traditional health facilities,' according to WHO[1]. Examples of telemedicine include virtual health care at home, where patients such as those who are chronically ill or elderly can receive support in some circumstances without leaving their homes. Remote consultation can be useful to reduce patient visits to clinics during a pandemic, and it facilitates communication between healthcare professionals in remote environments.

A 2005 survey by WHO revealed that teleradiology, teledermatology, telepathology and telepsychiatry were the first available applications of telemedicine[1]. In these ways the sustainability of health care could be supported by telemedicine[2,3].

The use of telemedicine devices in daily practice seems imminent, but issues with privacy, security and quality of service are still to be resolved[4-6], and it is imperative that medical students receive adequate training in e-health[7]. This is particularly relevant in countries with widely dispersed populations where telemedicine has the potential to address many of the key challenges in providing health care[8]. Before the recent SARS-CoV-2 (COVID-19) pandemic, some published literature indicated a skepticism about the use of telemedicine on a large scale, as there were issues in the domains of policy, funding priorities, and education and training. These authors suggested that it was 'quicker, easier and more cost-effective not to use telemedicine'[9].

Telemedicine during the COVID-19 pandemic

With the emergence of the COVID-19 pandemic, there was an urgent need to adopt new strategies[10]; teleconsultation solutions already used in previous epidemics, such as Ebola and SARS, were boosted[11-13] and gained even more visibility[14,15].

Teleconsultation can address the aim of reducing the level of contact among people to prevent cross-contamination and avoid the spread of coronavirus. Nevertheless, the goal of teleconsultation is also to continue providing patients, infected by COVID-19 or not, with medical support[11,16-18]. For the effective implementation of remote consultations as a modality of health care within a health system, it is important to examine how it is perceived by healthcare professionals, as this could have an impact on its effectiveness[19,20]. So far, little is known about the changes in consultation in European rural primary care settings during the COVID-19 pandemic[11,21-23].

The purpose of this study was to evaluate the effects of the COVID-19 pandemic on changes in patient consultation in European rural primary care as well as national regulations for these consultations. The authors hypothesized that the pandemic changed the tools and types of consultation in each country.

Methods

Study design and setting

This study was based on a key informant survey from 16 member countries of the European Rural and Isolated Practitioners Association (EURIPA). EURIPA operates under the umbrella of WONCA (World Organisation of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians).

Procedure

The steering committee of this project, called the EURIPA Covid-19 study, developed a semi-structured questionnaire with 68 questions, 21 of these including free-text comments.

The first draft of the questionnaire was based on the research objectives through an extensive literature review. Subsequently, a panel of five primary healthcare experts and one methodology expert used a Delphi process to evaluate the validity of the items and the length of the questionnaire, formulate suggested changes and identify missing items. The research team then discussed all feedback until consensus was reached, and a second version of the questionnaire was developed.

Validity

The psychometric properties of the questionnaire were assessed both quantitatively and qualitatively, focusing on validity as a theoretical construct and as an empirical construct. With regard to validity as a theoretical construct, eye validity and content validity were tested. During the development of the questionnaire, eye validity (whether the questionnaire measures at first glance what it purports to measure) and content validity (whether the items adequately represent the entire domain that the questionnaire attempts to measure) were tested. In each case, this was done by EURIPA primary healthcare experts, all international authorities in the field of health care. Construct validity (the extent to which the items in the instrument relate to a relevant theoretical construct) was improved by using the results of the scoping review as the theoretical basis in the first step of the development process.

The informants were contacted directly via email by the national coordinators, and the response rates were all above 50%. The optional free text was analysed to extract the reasons for the non-uniformity of the responses and discrepancies between the official rules on teleconsultation, if any, and the responses from key informants.

Participants

Primary care providers (PCPs), mainly general practitioners, from 16 European countries agreed to participate in this survey.

A convenience sampling technique was used whereby national coordinators (members of EURIPA International Advisory Board) chose informants from different geographical regions within their own country. The informants were contacted directly by the national coordinators; they were required to be PCPs (any professional working in primary health care, such as a doctor, nurse, physiotherapist or assistant) with a good command of English, as the survey was written in English and was not translated into the national languages. The informants were all practising PCPs and were asked to give the general view of the attitude of PCPs in their country.

Because a convenience sample of informants was used, the PCPs for each country may not be representative, although there was an attempt to achieve geographical variation. The national coordinators tried to avoid bias and to recruit practising PCPs with different interests, and not necessarily in telemedicine. The questionnaire was refined after a first pilot study. The authors cannot rule out the possibility of confounding or alternative explanations to results, since the survey responses show attitudes and not actual performance. Participants with complete data could not be distinguished from the less than 10% of participants with incomplete or missing data that were then considered as 'missing completely at random' (MCAR) data. The complete case analysis method was used and all participants with incomplete data were removed from the analysis.

Study size

When the number of informants reached or exceeded 30 for countries with 35 million or more inhabitants, and 20 for countries with less than 35 million inhabitants, data collection for that country was terminated.

Main outcome measures

The questionnaire included 68 questions (21 of which were based on free text), including sociodemographic variables, length of clinical experience and experiences of COVID-19 pandemic management and geographical location (Supplementary table 1), either rural, semi-rural and urban areas. The questionnaire was divided into several sections. This article reports on analysis of the questions related to patient consultation during the COVID-19 pandemic. Other sections of the questionnaire will be analysed in the future.

Analyses

To describe baseline characteristics, proportions were calculated for dichotomized or categorized data, and means were calculated for continuous data. Pearson's χ^2 test was used to measure the association between categorical variables. One-way ANOVA and the two-tailed student *t*-test were used for continuous variables such as age and seniority (length of experience) while non-parametric tests such as the Kruskal–Wallis test were used for ordinal numeric variables. The statistical significance threshold was set at 0.05. Multivariate analysis by logistic regression model was used to assess the association of multiple variables.

Statistics were conducted using IBM SPSS v27 (https://www.ibm.com/software/shopzseries/ShopzSeries_public.wss). For open questions, as the responses were limited to short sentences, a brief conceptual content qualitative analysis was carried out. Responses (direct quotes) from PCPs were independently reviewed by two members of the research team (DK, OG).

Ethics approval

The responses of respondents were collected anonymously; no formal approval from an ethics committee is required in the countries involved in the survey.

The informants were aware that they could withdraw at any point. Informed consent was received. Confidentiality and anonymity were assured. The study was conducted in accordance with the Declaration of Helsinki.

Results

Participants

Questionnaire respondents were collected from 406 PCPs in 16 European countries; 245 respondents (60.5%) were females and 160 (39.5%) males. Regarding location of the practice, 152 PC informants were rural (37.5%), 124 semi-rural (30.5%) and 130 urban (32.0%).

Descriptive data

Overall mean age of the respondents was 45.9 years (standard deviation (SD) 11.30) while their average seniority was 18.2 years (SD 11.6). Three hundred and eighty-one (93.8%) respondents were medical doctors; other disciplines (nurses, medical registrants, managers, social workers, midwives, dentists, physiotherapists) accounted for only 24 respondents (6%).

The baseline characteristics of the informants divided by countries and some descriptive statistics are presented in Table 1 while the responses of the informants are presented in Table 2.

The questions were about previous experience of telemedicine, the respondents' knowledge of remote consultation guidelines, the presence of internet issues (lack of broadband or unreliable internet connection) and the appreciation of new types of consultation by both patients and PCPs. There were considerable statistically significant differences between countries again. According to the informants', previous experience in remote consultation varied from 88% (22/25) in Latvia to 16% (5/31) in Turkey. Regarding the respondents' knowledge of remote consultation guidelines, the positive responses varied from 62% (18/29) in France to 9% (2/22) in Israel. Internet issues were stated by 65% of the respondents in Ukraine (20/31) but only by 9% (2/21) in Israel. According to the respondents, both patients and PCPs like these alternative methods to face-to-face consultation, with only Spain scoring less than 3 in the five-point- Likert scale average for the 'patients' appreciation of teleconsultation'.

It is important to note that collected information relates to the respondents' perception of patient appreciation of teleconsultation and not the true patient appreciation of teleconsultation; no patients were interviewed. PCPs' satisfaction with remote consultations was above 3 in all the countries apart from Israel (2.8, SD 2.8) and Turkey (2.7, SD 1.2). However, even for PCPs satisfaction, the differences between the individual countries are significant.

There were considerable differences between countries in the adoption of the different types of consultation by informants, and these differences were statistically significant. Video-consultation

was mentioned as the preferred type of consultation for the 13% of the informants in France (4/30) but no informants at all in Croatia, Czech Republic, Georgia, Hungary, Israel, Italy, Moldova, Romania, Slovakia and Spain stated that they prefer a video consultation. Telephone consultation was the preferred type of consultation for 96% of the respondents in Israel (21/22), while the lowest appreciation of telephone consultation was found in Moldova 33% (7/21). The preferred types of consultations are summarized in Table 3.

Only seniority seems to have a statistically significant association with video-consultations: less senior people were more likely to adopt video-consultation, while all other associations were not found or the difference between the two groups, although relevant, did not reach a statistical significance, as it was for age and video-consultation.

No statistically significant association was found between gender and attitude to adopt video-consultation and on the level of PCPs satisfaction. The same applies for the site of practice (rural, semi-rural, urban).

Logistic regression including age, gender, site of practice, seniority, IT issues, previous experience of remote consultation and respondents' knowledge of remote consultation guidelines confirmed that the only factor significantly associated with the adoption of video-consultation was seniority (inverse relationship) of the PCP (OR 1.19, 95%CI 1.02–1.40, p=0.03). Finally, age, gender and seniority of the informants were checked for an association with the preferred types of consultation. The outcomes are shown in Table 4.

Table 1: Respondent characteristics

Country	Respondents *n* (%)	Age mean (SD)	Seniority mean (SD)	Male gender *n* (%)	Location of practice urban *n* (%)	Location of practice semi-rural *n* (%)	Location of practice rural *n* (%)
Croatia	20 (5)	52.9 (8.5)	26.3 (9.8)	6 (30)	6 (30)	6 (30.0)	8 (40)
Czech Republic	22 (5)	36.3 (5.5)	9.0 (5.4)	14 (60)	9 (40)	8 (36.3)	5 (23)
France	30 (7)	45.8 (12.5)	16.8 (12.5)	12 (40)	4 (13)	11 (36.7)	15 (50)
Georgia	31 (8)	45.0 (8.3)	13.6 (8.0)	3 (10)	12 (39)	7 (22.6)	12 (39)
Greece	20 (5)	49.5 (7.2)	20.1 (7.6)	11 (55)	1 (5)	3 (15.0)	16 (80)
Hungary	20 (5)	47.8 (12.2)	19.3 (12.3)	13 (65)	5 (25)	2 (10.0)	13 (65)
Israel	22 (5)	51.1 (11.9)	22.1 (11.3)	15 (68)	5 (23)	12 (54.6)	5 (23)
Italy	31 (8)	53.6 (14.2)	25.4 (14.7)	22 (71)	13 (42)	11 (35.5)	7 (23)
Latvia	25 (6)	49.3 (12.3)	22.9 (15.7)	3 (12)	10 (40)	10 (40)	5 (20)
Moldova	21 (5)	40.3 (11.2)	14.0 (10.9)	2 (11)	14 (67)	3 (14)	4 (19)
Poland	34 (8)	45.6 (10.9)	17.8 (10.8)	13 (37)	17 (50)	8 (24)	9 (7)
Romania	20 (5)	49.9 (7.8)	22.0 (10.0)	5 (25)	6 (30)	1 (5)	13 (65)
Slovakia	20 (5)	46.0 (8.9)	15.9 (12.6)	6 (30)	6 (30)	7 (35)	7 (35)
Spain	28 (7)	47.7 (9.3)	21.2 (8.9)	12 (43)	0 (0)	7 (25)	21 (75)
Turkey	31 (8)	39.3 (8.7)	13.2 (8.2)	14 (45)	10 (32)	14 (45)	7 (23)
Ukraine	31 (8)	38.4 (9.4)	13.4 (8.1)	9 (29)	12 (39)	14 (45)	5 (16)

SD, standard deviation.

Table 2: Questionnaire responses

Country	Previous experience of telemedicine *n*/total (%)	Respondents' knowledge of remote consultation guidelines *n*/total (%)	Patient appreciation of remote consultation (five-point Likert scale) mean (SD)	IT problems n/total (%)	Primary healthcare provider satisfaction with teleconsultation (five-point Likert scale) mean (SD)
Croatia	14/20 (70)	4/19 (22)	3.3 (0.9)	7/20 (35)	3.5 (0.8)
Czech Republic	14/22 (63)	4/22 (18)	3.6 (0.7)	8/22 (36)	3.2(0.9)
France	7/30 (23)	18/29 (62)	3.2 (0.8)	14/28 (50)	3.0 (1.1)
Georgia	24/31 (77)	6/31 (19)	4.5(0.8)	4/30 (13)	4.3 (0.9)
Greece	6/20 (30)	10/20 (50)	3.5(0.9)	8/20 (40)	3.2 (0.8)
Hungary	12/20 (60)	3/20 (15)	3.7 (0.8)	6/20 (30)	3.6 (0.8)
Israel	15/22 (68)	2/22 (9)	3.6 (0.7)	2/21 (9)	2.8 (0.8)
Italy	24/31 (77)	8/31 (26)	3.5 (0.8)	13/29 (44)	3.4 (1.0)
Latvia	22/25 (88)	10/25 (40)	3.5 (0.7)	15/25 (60)	3.2 (0.9)
Moldova	14/21 (67)	12/31 (57)	3.5 (0.8)	9/21 (43)	3.6 (1.0)
Poland	15/34 (44)	9/34 (27)	3.4 (0.9)	17/33 (52)	3.3 (1.0)
Romania	14/20 (70)	1/20 (5)	3.4 (0.8)	9/20 (45)	3.9 (1.1)
Slovakia	17/20 (85)	3/20 (15)	4.1 (0.8)	3/20 (15)	3.9 (0.9)
Spain	12/28 (43)	2/28 (18)	2.9 (0.9)	11/28 (39)	3.2 (0.6)
Turkey	5/31 (16)	6/31 (19)	3.0 (1.3)	6/30 (20)	2.7 (1.2)
Ukraine	16/31 (52)	14/31 (46)	3.0 (1.0)	20/31 (65)	3.0 (1.0)

SD, standard deviation.

Table 3: Types of preferred remote consultation in study countries

Country	Video *n*/total (%)	Telephone *n*/total (%)	Mix of video and phone *n*/total (%)	No teleconsultation *n*/total (%)	Other† *n*/total (%)
Croatia	0/20 (0)	8/20 (40)	7/20 (35)	0/20 (0)	5/20 (25)
Czech Republic	0/22 (0)	17/22 (77)	2/22 (9)	0/22(0)	3/22 (14)
France	4/30 (13)	11/30 (37)	13/30 (43)	1/30 (3)	1/30 (3)
Georgia	0/31 (0)	19/31 (61)	10/31 (32)	2/31 (7)	0/31 (0)
Greece	1/20 (5)	15/20 (75)	3 /20(15)	1/20 (3)	0/20 (0)
Hungary	0/20 (0)	11/20 (55)	6/20 (30)	0/20 (0)	3/20 (15)
Israel	0/22 (0)	21/22 (96)	1/22 (5)	0/22 (0)	0/22 (0)
Italy	0/31 (0)	19/31 (61)	11/31 (36)	1/31 (3)	0731 (0)
Latvia	1/25 (4)	19/25 (76)	4/25(16)	0/25 (0)	1/25 (4)
Moldova	0/21 (0)	7/21 (33)	12/21 (57)	0/21 (0)	2/21 (10)
Poland	1/34 (3)	22/34 (65)	5/34 (15)	4/34 (12)	2/34 (6)
Romania	0/20 (0)	9/20 (45)	9/20 (45)	0/20 (0)	2/20 (10)
Slovakia	0/20 (0)	16/20 (80)	2/20 (10)	1/20 (5)	1/20 (5)
Spain	0/28 (0)	25/28 (89)	2/28 (7)	0/28 (0)	1/28 (4)
Turkey	1/31 (3)	13/31 (42)	4/31 (13)	12/31 (39)	1/31 (3)
Ukraine	2/31 (7)	17/31 (55)	6/31 (19)	6/31 (19)	0/31 (0)
	χ2 (15, *n*=406) =23.63 *p*=0.070	χ^2 (15, *n*=406) =55.86 *p*<0.001***	χ^2 (15, *n*=406) =48.49 *p*<0.001**	χ^2 (15, *n*=406) =72.27 *p*<0.001***	χ^2 (15, *n*=406) =31.53 *p*=0.007**

*p<0.05, **p<0.01, ***p<0.001
† SMS, social media messages, emails.

Table 4: Association of age, seniority and gender of respondents with preferred type of remote consultation

Association of age/seniority with type of teleconsultation	*n*	Mean	SD	*p*-value (*t*-test)
Age–Mainly video consultation				0.066
Yes	9	39.1	9.1	
No	392	46.1	11.3	
Seniority–Mainly video consultation				0.019
Yes	9	9.2	8.3	
No	379	18.3	11.6	
Age–Mix of video and telephone consultation				0.319
Yes	96	47.0	10.8	
No	305	45.6	11.5	
Seniority–Mix of video and telephone consultation				0.259
Yes	91	19.4	11.2	
No	297	17.8	11.7	
Age–Telephone consultation				0.664
Yes	246	45.8	11.3	
No	155	46.3	11.3	
Seniority–Telephone consultation				0.383
Yes	241	17.8	11.7	
No	147	18.8	11.5	
Age–Other type of consultation				0.107
Yes	22	49.7	11.5	
No	379	45.7	11.3	
Seniority–Other type of consultation				0.111
Yes	22	22.0	11.9	
No	366	17.9	11.6	

SD, standard deviation.

Analysis of answers to open questions

Table 5 summarizes the free-text comments of the informants.

Table 5: Summary of data from open-ended questions

Country	Previous experience of remote consultations and tools used	Informants' knowledge of remote consultation guidelines	Quoted responses relating to IT problems	Quoted responses relating to work satisfaction
Croatia	All patients have an email address and telephone number – for diagnostic results, check-ups, prescriptions. Only telephone consultation for patients who are often away from where they live (working, vacation, education etc.)	No (informants are unaware of existing guidelines).	*The line is very slow.* *Patients don't have knowledge about it.* *It is difficult for patients with lower education to get used to it.* *Computer not working properly.* *Areas without internet.* *Old patients don't have internet.* *Not all patients have a computer, especially older people.*	*A lot of pressure from patients in the practice, and a lot of extra work.* *It is not completely useful.* *Some extra time is needed for these consultations.* *It sorts out the main medical issues.* *The clinical examination is more purposeful.* *It is quicker medicine, but sometimes the patient cannot explain the problem.*
Czech Republic	Common before pandemic for known patients and those who are reliable. Phone/email consultations are common, video implemented during the pandemic. Telephone consultation Electronic prescription of medication	National GPs society guidelines	*Many, but we have good IT specialist, who can fix all of them.* *Errors in central COVID systems are country wide.*	*Person-to-person contact is a core characteristic of our profession.* *It avoids unnecessary visits.* *Patient's presence is better.* *It saves lot of time for other patients.* *Patients who were visiting us more for social than medical reasons are mostly staying at home and do not crowd practices.*
France	Poor experience before pandemic, a few remote consultations for known patients and administrative issues. Video consultations for patients who are abroad and prescriptions. Mainly telephone consultations due to poor internet.	Health authorities' guidelines	*Lack of high-speed internet.* *Poor internet signal.* *Internet connection impossible in some villages.* *Bad IT connection, lack of sound or video.* *Nevertheless, the oldest people (with home care) have been helped by the nurses or by the family to assist them for remote consultations.*	*It was a big challenge to start it with this crisis: new way of working, but also new issues to be faced. Before Covid-19, remote consultations in France was not used a lot!* *One of the challenges will be to challenge private companies because we want them to develop tools appropriate for rural areas.* *Very useful to reduce contamination of patients and to follow up certain illnesses or medication renewals.* *No direct contact, impossible to perform physical examination.* *Waste of time (scanning papers, sending prescriptions to pharmacies).* *Exhausting for me.*
Georgia	Before pandemic, mainly by telephone; video consultations are new.	No	*Technical problems with devices we use (eg connection problems for both patients and doctors, not having the same app).* *No financial support from government.* *I pay for the telephone bills myself.*	*Much easier and more comfortable to contact patients.* *Telephone consultations take a lot of time.* *Easy and very useful way to get in contact with patients.*
Greece	Mainly for patients with chronic or acute problems. E-mail, phone, WhatsApp, Viber, Facebook, Messenger, Skype.	The National Organization for Public Health as well as medical associations – for remote consultations for patients suspected to have COVID-19 or with established COVID-19 infection. Government encourages remote consultations and prescription when personal contact is not necessary.	*Low speed internet connection.* *Troubles with the internet connection.* *The public phone service and internet not always available.*	*It is the rural population (mainly older patients who live alone) who experience more difficulty in expressing their symptoms and understanding and following medical advice.* *Personal meetings, when not necessary, shouldn't be encouraged, taking into account the difficulties in moving from home (poor public transportation, elderly not driving, distance ...)* *it is not possible to examine the patient through the computer.* *They appreciate the interest of the doctor without the need of going to the hospital.* *The increased safety measurements are necessary.*
Hungary	Mainly phone consultations during night shifts, prescriptions, prevention advice and in case of simple symptoms when physical examination was not critical.	Only local guidelines.	*Sometimes problem with the internet connection.* *It did not work.* *It is more comfortable for our patients; they don't have to travel.*	*More predictable, more time for real medical problems; patients need of development about these techniques, but patients like them.* *Several types of remote consultation may make the work easier in the near future.* *Time management is easier. The waiting room is not crowded, which means less danger of infections. The waiting time is much shorter.* *Positive: more time for serious problems.* *Negative: No opportunity to do physical examination.* *Fast, comfortable, modern.* *It works!!!* *Personal contact and examinations cannot to be substituted.* *Easier to stay in contact, faster, more comfortable.* *It cannot be used in every situation.* *Missing the personal impressions.*
Israel	Phone consultations were common.	No information	*Slow communication.* *Video consultations are of low quality.*	*Sometimes it is faster.* *I like to see, hear and feel the patient next to me and definitely examine where*

				relevant. *I miss the personal contact even though some of the phone consultations save my consultation time.* *Some of the patients have the illusion that everything can be done this way, even when physical examination is still needed.* *It is good enough for many situations. When appropriate it is a useful and safe option. Sometimes due to laziness or misconception of the method inappropriate issues are brought up and then consume time and so there is the need to be back again in a regular meeting.* *Very bad medicine.* *Face-to-face consultations, including physical examinations, are (not always) very important.*
Italy	Telephone consultations for simple medical problems have often been part of daily practice. WhatsApp Images, video consultations are now used.	Guidelines about telephone consultations for COVID-19 patients.	*Internet line problems.* *We don't have sufficient devices for individual protection. It would be more useful to make swabs for COVID-19 and allow face-to-face consultation.* *Internet is very slow.* *We were not informed about what we need to do in order to have new ways to manage IT in the pandemic.* *Most of the patients in rural areas are old and not familiar with internet or computer. Therefore, e-mail consultations and/or video consultations are impossible to do.* *Rural people prefer real meeting, not virtual one.* *Digital divide of patients (eg no smartphone.).*	*It is possible sometimes, but not always.* *Clinic work with visit and 'something else' is important.* *No touch. How can I feel an acute abdomen?* *Patients come in the clinic only when really needed. Bureaucratic stuff can be managed by phone/email/WhatsApp.* *I'm a doctor, I like visiting and talking directly to my patients.* *During the pandemic period this way of working helped doctors and patients, but it increased the work hour.* *I don't think that a telephone consultation or a video/remote consultation should be seen as a replacement of the traditional clinical examination. Furthermore, in many cases, telephone consultations often lead to misunderstandings between the doctor and the patient's actual needs.*
Latvia	Telephone consultations on a regular basis (dermatological symptoms, chronic diseases, child-related diseases), despite being not officially considered a consultation before pandemic and not paid for. E-mails and WhatsApp for communication, but not for 'full' consultations.	No guidelines but restrictions, when phone consultations are reimbursed and when not.	*Slow internet connection is very common, affecting program performance.* *It is disturbed by the need to log in to the e-health portal again and again during the day.* *Bad connection, low skills of the elderly.*	*Now I have double shift each day. 4–5 hours with patients at practice and after that 2–3 hour telephone consultations and paperwork is not included in that time.* *It is safe for me and my team.* *Possible mistakes.* *Not enough info to make a decision during phone consultations.* *In order to fully assess the patient's condition, a physical examination is also necessary.* *More 'official' ways of consultation are needed.*
Moldova	Telephone consultation for patients with non-communicable diseases, telephone invitations for vaccination, telephone consultations for acute problems when needed during night or weekend. Viber.	Order of the Ministry of Health regarding the agreement to provide medical assistance. Guidelines only for telephone consultation for patients with COVID-19 symptoms.	*Poor connection, poor file storage speed.* *No internet connection.* *Not all patients know how to use IT.*	*Patients make more phone calls.*
Poland	Mainly phone consultations for prescriptions, nursing advice using Messenger; video advice (eg care instructions, psychological support, family advice).	National GPs society guidelines	*Problems with wi-fi connection.* *Problem with internet connection.* *Internet disruptions.* *Not enough internet speed, no connection.* *Patients do not know about the possibility of teleconsultation.* *Not all seniors use mobile phones and fixed telephone network does not exist in many villages.* *Many residents do not have access to Internet.* *Poor network coverage.*	*70% of patients do not have to come to the clinic.* *This visit is based on interview, work is calmer, there is no crowd in the waiting room, and patients ring only for more important reasons.* *The most common problems can be solved by phone.* *I miss the personal contact.* *Impossible to examine the patients.* *It shortens my working time, I can devote more time to developing care plans, and take care of more patients.* *In my site there is now more work than in the past.* *The biggest problem is with older people: you have to speak loudly and not all answers are specific and each is subjective.*
Romania	Phone or video advice but unofficially prescriptions and check-ups (blood pressure), mainly for patients from remote areas. Not paid for WhatsApp.	No information.	*The internet is not always working.* *The central system is not working properly.* *How to send the medical receipt, how the patient prints the receipt, how the pharmacies elaborate the receipt when the patient does not have a printer.*	*Easy access.* *It cannot completely replace consultation.* *A major step in moving the specialty in the future.*

Slovakia	Mainly phone consultations for remote patients, but they were not paid for. Video, e-mails (send pictures), Facetime are also used.	Guidelines of health insurance (video consultation must take around 20 minutes but no guidelines how this consultation should look).	*There is not good connection.* *Very slow internet.* *We do not have optical cables, so we have slow internet.* *Sometimes problems with sending the prescriptions.* *There are IT problems: a lot of people do not have internet access and a computer.* *There is not a good connection, and phones were always busy.* *It was hard to make a call to our surgery.*	*Need rules from ministry of health.* *Elderly people especially have some worries about video consultations, but it is a good way to solve many problems of patients.* *Afraid that I could miss some diseases, or I could not notice something important through a phone consultation.* *Elderly people do not use it and mainly they need my help.* *Not bad for light problems, advice, interview.... but not sufficient for all problems, for real examinations.* *I cannot have any free time.* *We lack non-verbal information, that could help a doctor. Speaking to the patient in a face-to-face consultation is essential for good diagnostic and healing decisions.*
Spain	Mainly phone consultations, for simple symptoms (skin changes, lab results, check-ups).	Virtual consultation protocols – guidelines from government and sanitary authorities.	*Lack of permanent internet connection.* *Dissatisfied, diagnostic mistakes.* *A mixture of pitfalls with any kind of system for telephone and Internet connection.*	*Some consultations need physical examination; elderly people are more likely to need face-to-face appointments.* *During COVID it is possible to be 'near' our patients with less risk for all.*
Turkey	Phone consultations, but rare.	Ministry of Health guidelines on phone consultations.	*No experience.* *Sometimes patient's phone number is not accessible.*	*I prefer to see them at my place.* *I cannot investigate my patients' conditions.*
Ukraine	Phone consultations to discuss some changes in treatment, give the recommendations at the beginning of infection, online consultations between GP and cardiologist. Skype.	No guidelines for video consultations. Just points about distance consultations for patients with COVID-19.	*Bad connection.* *Lack of internet connection.* *Poor connection.* *Internet connection is unstable.* *Lack or bad internet.* *No equipment.* *Bad connection and poor equipment.*	*Not every patient can use remote consultations, because of their social status.* *No good equipment and connection in order to provide virtual consultations.* *Patients are 60–75 years old, and they can only call by phone.* *Lack of face-to-face contact and worse control of chronic diseases.*

Previous experience of remote consultations

The respondents usually used telephones before the pandemic ('especially in a flu pandemic', 'mainly during night shifts') and they mentioned that 'now it is legal' and 'can also 'examine' patient through phone, video or email (send pictures)'.

Especially in rural settings, it 'is difficult for my patients to come to my practice so often I offer 'phone or online consultations' and '... all [patients] have my e- mail address and telephone number'.

The phone consultations were used for 'reporting of diagnostic results and health status, follow-up, prescriptions, prevention advice, nursing advice using Messenger, care instructions, psychological support, telephone invitations for vaccination', and respondents were 'receiving questions, videos, photos from the patients on WhatsApp before the Covid19 pandemic. Photo (eg skin problems) and audio consultation (eg in case of simple diarrhea)'.

The IT problems could be classified as 'lack of internet/electricity /devices/applications', 'lack of knowledge about the consultation process from both sides (patient and physician)' and 'payment of IT/ phone bills'. Although phone and/or video consultations saved time, in some places not only patients but also physicians couldn't use this opportunity. Physicians and nurses helped elderly patients to use devices in some settings.

Work satisfaction has new dimensions among physicians: 'clinical examination' seems more purposeful while physicians felt under pressure from patients. This process is 'avoiding unnecessary visits', it is 'good as keeping a kind of overview in quarantine times, but not suitable for all the medical conditions and for all our patients', and 'very useful to reduce contamination of patients and in the follow up of certain illnesses or medication renewal'. Also, 'it is much quicker medicine, but sometimes, the patient cannot explain the problem'.

One of the challenges could be for elderly people and/or living in rural areas:

> *... to challenge private companies – because we want them to develop tools appropriate for rural areas.*

Also:

> *... it is the rural population (mainly older patients who live alone) who experience more difficulty in expressing their symptoms and understanding and following medical advice.*

Some conclusions from respondents on remote consultations were:

> *Positive: more time for serious problems.*
>
> *Negative: no opportunity to do physical examination.*
>
> *Sometimes it's faster but it would be great if I could examine the patients. And because I'm new a lot of patients don't know me and don't trust me on the phone.*
>
> *I don't think that a telephone consultation or a video/remote consultation should be seen as a replacement of the traditional clinical examination. Furthermore, in many cases telephone consultations often lead to misunderstandings between the doctor and the patient's actual needs.*

I do not have good equipment and connection to provide virtual consultations, also a lot of my patients are 60-75 years aged, they can only call me by phone.

I'm a doctor, I like to visit and to talk directly with my patients.

Guidelines on remote consultations

Regarding the respondents' knowledge of remote consultation guidelines, respondents reported guidelines only for COVID-19 patients, mainly prepared by local authorities and in some countries, such as Slovakia, by health insurance companies. Some respondents raised the issue of a high level of complexity of these guidelines: 'I did not read' and 'It's very long'. This should be considered in the development of future guidelines suitable for primary care.

Discussion

Principal results

Many differences between countries on the level of adoption of remote consultation have been found in this study. Significant differences between countries were also found in adopting alternative arrangements for face-to-face consultation: remote teleconsultation is well appreciated by both healthcare professionals and patients, but the most common way of remote consultation remains telephone consultation. A factor significantly inversely associated with the adoption of video consultation was the seniority of the PCP.

The difference between countries may be explained because most countries in this study have not created a regulatory framework to authorise and integrate telemedicine into their national health systems, including during emergency and public health outbreaks[24]. Unlike countries with a capitation system policy, those with a different remuneration scheme, for example fee for service, need to adopt rapid change in their reimbursement policies. In the USA, the use of Skype, Zoom, Google Hangouts, Apple and telehealth visits has been authorised and reimbursed at the same rate as face-to-face visits since 1 March 2020[25]. In France, patients have been reimbursed when using telemedicine solutions since September 2018; in March 2020, due to the COVID-19 crisis, the French government issued a decree allowing French health insurance to cover any medical teleconsultation[24]. Health authorities in many other countries have implemented telemedicine user guidelines to incentivise people to use such services during the COVID-19 pandemic[11].

The present study confirms that although during the pandemic most doctors changed their clinical attitudes, most of them rely on the most traditional alternative to face-to-face consultation, telephone consultation, which accounts for an average of 61.3% (249/406) consultations, varying from 33% (7/21) in Moldova to 96% (21/22) in Israel. A mixture of video and telephone consultation is also quite popular at 24% (97/406), but again there is great variation between countries, from 5% in Israel (1/22) to 57% (12/21) in Moldova. A mixed-methods longitudinal study in the UK in 2020 during the pandemic[21] found that consultations were administered in 89% of the cases by telephone while only 1% were coded as video, increasing to 3% for patients aged more than 85 years. Fewer than 1% of consultations coded by GPs were e-consultations via email.

Video consultations alone were not so popular in the present study, accounting for only 3% (10/406) of the total respondents. In France, 13% (4/30) of the respondents are in favour of video consultation alone while in many other countries (Croatia, Czech Republic, Georgia, Hungary, Israel, Italy, Moldova, Romania, Slovakia and Spain) no respondents are in favour of video consultation alone. This is in line with what was found by other authors[26]; a qualitative study conducted in Spain showed that even though 83% of the interviewed informants had not conducted a video-consultation, they considered it to be an adequate option for health care (96.2%). In the UK, telephone consulting is widespread but, prior to the pandemic, video-consultations were very rare[27,28] and the success of e-consultations was low but increasing[29,30].

Only a few respondents seem to refuse any alternative to face-to-face consultation with no respondents at all in many countries (Croatia, Czech Republic, Hungary, Israel, Latvia, Moldova, Romania and Spain), while Turkey seems to be the most traditional country: 12/31 respondents 285 (39%) are against video-consultation. This is in line with what has been found by other researchers[26-28] where the increasing success of remote consultations has been highlighted. Other ways of remote consultation, including mobile SMS, social media messages and emails, account for only 5% (22/406) of respondents, ranging from 25% (5/20) in Croatia to 0% in Georgia (0/31), Greece (0/20), Israel (0/22), Italy (0/31) and Ukraine (0/31). In a British study, the consultation rate for GP-to-patient only using SMS messages was also very low[21].

The factor that seems more related to the adoption of more sophisticated ways of remote consultation such as the video consultation is seniority – those who are less senior are more disposed to adopt video-consultation as a reliable alternative to traditional ways of consultation. A Catalan study, carried out before the pandemic, confirms that the youngest professionals, under 40 years of age, are more likely to be intermediate or advanced users of technology[4].

Special educational programs should be implemented to increase e-health competencies both in patients and family doctors.

In the present survey, 56.9% (231/406) of respondents declared previous experience of remote consultations.

Remote primary care consultations, conducted mainly by telephone, video, or through asynchronous text-based GP–patient communication via email or mobile SMS had started to become more and more prevalent before the pandemic[21]. In Denmark, GP telephone triage and patient emails were already standard practice before the pandemic[31], and the US Kaiser Permanente has been offering secure GP–patient email communication and routine telephone/video consultations for many years[32].

Internet issues were reported on average by 38.2% (152/398) of respondents; these issues were stated only by 10% (2/21) of respondents in Israel but by 65% (20/31) in Ukraine and by 60% (15/25) in Latvia, two countries with a high rural population. Surprisingly, IT issues were also raised by 50% (14/28) of French respondents. In a recent British study, GPs declared varying levels of IT problems with video-consultations and while some GPs had high expectations of video calls, as the pandemic declined others felt that face-to-face consultation was increasingly preferable to video-consultation for patients who needed visual assessment[21]. Regarding this issue, some authors are very concerned about equity: video-consultation will increase access for those with good IT skills, but it will increase the already existing health inequities[28,33]. Increasing the availability of new tools thatrequire sophisticated infrastructures, without investing adequately in rural and dispersed areas, will inevitably lead to an increase of inequity. Fortunately the countries with a fee-for-service reimbursement scheme that did not previously reimburse remote consultation have all taken urgent measures to change this scheme; however, this problem is far from being completely solved.

Limitations

This was a small-scale, mixed-methods study and there could be limitations related to the transferability of these findings. Nonetheless, the aim of addressing healthcare professionals' perceptions about the implementation of remote consultations in their daily clinical practice was achieved. Because a convenience sample of informants was used, the PCPs for each country may not be representative, although there was an attempt to achieve geographical variation. The national coordinators tried to avoid bias and recruit practising PCPs with different interests, and not necessarily in telemedicine. Because this is a survey of key informants, the authors could not fully assess the representativeness of the sample. However, to get the most accurate picture of selection bias, all researchers kept a detailed log of selection and recruitment strategies in their country. The sample is also compared as closely as possible with the national population of GP practices.

The questionnaire was refined after a first pilot study. However, it was not validated against other measures apart from a face validation procedure. The authors cannot rule out the possibility of confounding or alternative explanations to these results, since the survey responses show attitudes and not actual performance. However, the results align with the outcomes of previous studies[4]. The study did not explore the patients' points of view directly but only what was reported by PCPs. Future studies will be needed to explore patients' views on teleconsultations during the pandemic and verify whether these attitudes will tend to change rapidly or persist once the pandemic is over.

It is important to note that differences in the number of answers to each of the questions, the online questionnaire and the selection process may be a source of independent biases in generalizability of the results.

Conclusion

The study respondents identified both positive and negative aspects related to remote consultations and the difficulties associated with their implementation. Both PCPs and patients have rapidly adapted to this alternative to face-to-face consultation, although most of them prefer the most traditional way of remote consultation: telephone consultations. The less senior PCPs are more likely to adopt more sophisticated ways of remote consultations so it is likely that in the near future video-consultation will become more successful. A digital divide is still a major concern and, apart from a few exceptions, Internet issues were claimed by a considerable number of informants both in urban and rural settings. Legal, ethical and regulatory issues should be addressed by health authorities for an effective remote consultation implementation.

Acknowledgements

Many thanks are also due to all PCPs across Europe who actively collaborated in responding to the survey.

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