


BMJ Open Changes in consultation mode during different phases of the COVID-19 pandemic in Croatian family medicine: a cross-sectional study

Jasna Vučak ¹, Branislava Popovic,¹ Aleksandar Ljubotina,¹ Željko Vojvodić,² Diana Sabljak,³ Tina Zavidic¹

To cite: Vučak J, Popovic B, Ljubotina A, *et al*. Changes in consultation mode during different phases of the COVID-19 pandemic in Croatian family medicine: a cross-sectional study. *BMJ Open* 2023;**13**:e066325. doi:10.1136/bmjopen-2022-066325

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-066325>).

Received 11 July 2022

Accepted 09 January 2023



© Author(s) (or their employer(s)) 2023. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Katedra obiteljske medicine, Sveučilište u Rijeci, Rijeka, Croatia

²Sveučilište Josipa Jurja Strossmayera u Osijeku, Osijek, Osijek-Baranja, Croatia

³Association of Teachers in General Practice/Family Medicine, Zagreb, Croatia

Correspondence to

Dr Jasna Vučak;
jasna.vucak@yahoo.com

ABSTRACT

Objectives To describe the changes in the type, length and reasons for consultations in primary healthcare during the COVID-19 pandemic in Croatia. This study aimed to test a hypothesis regarding the increased workload of general practitioners (GPs) by introducing more virtual consultations (VCs).

Design The study design was cross-sectional and comprised two phases: retrospective and prospective. The retrospective phase included data from April, May and June of 2019, 2020 and 2021, and the prospective phase included data from 2 weeks in June 2021. Additionally, the number, length and reasons for face-to-face consultations (FTFC), VCs and telephone consultations (TCs) with nurses were collected.

Setting and participants Overall, 6 GPs from different regions in Croatia with 10 125 enlisted patients.

Main outcomes measures The retrospective phase compared data for consultation types obtained from electronic medical records. The prospective phase collected the number, length and reasons for FTFCs, VCs and TCs with nurses.

Results FTFCs decreased from 58.1% of the total number of visits in 2019 to 41.2% in 2020, while VC increased from 41.9% in 2019 to 58.8% in 2020. Furthermore, an eightfold increase in email consultations was recorded. The average lengths of an FTFC and TC were 7.13±3.38 and 4.01±2.09 min, respectively; FTFCs were significantly longer than TCs ($t=7.038$, $p<0.0001$). There was an increase in the total workload (9.4%) in 2021 compared with 2019.

Conclusion Croatian GPs faced changes in work organisation along with increased workload during the pandemic. Despite the shortening of time in FTFCs, the workload has increased due to the increase in VCs. An appropriate legal framework should be implemented for this new form of consultation. Future research is needed to address the impact of these changes on healthcare quality.

INTRODUCTION

In Croatia, the first SARS-CoV-2 case was confirmed on 25 February 2020 and a lockdown was declared in March 2020.¹ General practitioners (GPs) were poorly informed by the health authorities on how to continue

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ General practitioner (GP) investigated workload parameters in real conditions of everyday work. This is the first national research on changes in types and length of consultation in family medicine at different stages of the COVID-19 pandemic in Croatia.
- ⇒ Participating teams were from five of the six Croatian regions, thus representing a population with regional specificities.
- ⇒ Accurate measurement of the time spent in face-to-face consultation and telephone consultations.
- ⇒ The relatively short period of monitoring the length of the consultation (14 days) limits more detailed conclusions about the actual length.
- ⇒ Due to the too small sample, the results of the study cannot reliably be extrapolated to a wider sample of Croatian GPs.

working during the COVID-19 pandemic. They independently reorganised their clinical work using virtual communication (VC), which is defined as the use of technology and telecommunications systems to enable healthcare to users far from service providers.²

Even before the pandemic, GPs were faced with an increasing workload. Hence, the need for VC became common. In the prepandemic years, several studies were conducted on the use of telephone and internet technology in the primary healthcare (PHC) setting.^{3–5} Telephone consultations (TCs) were mostly used as triage to facilitate health promotion interventions and the delivery of routine healthcare to people with chronic disorders, which had the potential to reduce the workload among GPs.^{6–8} A study by Atherton *et al* showed that GPs expressed resistance and showed less interest in alternative consultation methods despite the advantages they had.⁹

To improve access and efficiency for the staff and patients, the use of online consultation

systems has been investigated. However, it is possible that its use can increase primary care workload and costs.^{3 10} It has been pointed out that information technology can improve care for patients with chronic diseases. However, the acceptance of health information technology worldwide has been slow.¹¹

Digital technologies are not routinely used by GPs in communication or clinical consultation with their patients as it usually depends on individual interests.¹² In medicine, wider use of the web, telephone and emails should follow the trend of using IT technologies as well as in other spheres of life.¹³

The WHO, which provides a vision of primary care, has suggested that new technologies for consultation could improve the flow of information between patients and health workers and increase access to primary care among patients. The main goal was to improve health and well-being through stronger primary care services.¹⁴

Faced with restrictions due to the COVID-19 outbreak and recommendations to preserve the health of medical professionals and protect patients, the need for VC increased. As the first point of care, GPs had adapted to VC despite several challenges and concerns regarding confidentiality and security.^{15 16}

Owing to the COVID-19 pandemic, healthcare systems worldwide introduced various changes in their primary care services. Recent studies compared changes in work organisations before and during the different phases of the pandemic. Most investigated the rapid implementation of remote consulting.^{17 18}

GPs made significant efforts to protect their staff. They began using VC to maintain patient care. In some countries, a guide to telephone and video consultation for COVID-19 patients was published, and most face-to-face consultations (FTFC) were switched to virtual. The majority of national primary care guidelines for COVID-19 supported the use of new technology.^{19 20}

Limited qualitative studies that dealt with changes in the organisation of GPs' work before and during various phases of the pandemic have been published.^{17 18 21}

Therefore, the first aim of this study was to compare the type of consultation changes from April to July 2019 (the prepandemic period) and 2020 and 2021 (the pandemic years).

The second was to determine the changes in the type, length and reasons for consultations in PHC during the third wave of the COVID-19 pandemic. To the best of our knowledge, studies that have included all the observed components of consultation are rare. Measuring consultation length during COVID-19 allows us to evaluate the hypothesis of reducing workload by switching to virtual forms of consultation.

METHODS

Study design

The research consisted of two phases, retrospective and prospective, based on data from six GP offices located

in different regions of Croatia. The retrospective phase included data from April, May and June 2019, 2020 and 2021, while the prospective phase included data from 2 weeks in June 2021. Since the primary goal was to gain an overview of the forms and length of consultations during the COVID-19 pandemic, it was designed as a cross-sectional study. In the retrospective phase, the following data were collected: the number of both FTFC and TC by GPs and nurses, and e-consultations (email, SMS messaging, social networks and other applications). Data were collected from the electronic medical records (EMR) of patients who consulted GPs during the above-mentioned period. In the prospective phase, we collected sociodemographic data (such as age, sex, education and employment status), the number, length and reasons for FTFC, virtual synchronous (video and telephone) and asynchronous (email and text) consultations, as well as TC with nurses. FTFC and TC, according to reasons, were divided into five groups: acute disease, chronic disease, malignant disease, COVID-19 and administration. Diagnosis codes were used according to the International Classification of Diseases Tenth Revision-10 classification. The length of the consultation was measured by the GPs themselves from the beginning to the end via a digital clock on the computer for FTFC and an integrated chronometer on the wireless phone for TC.

Study sample

For logistical reasons, the GP sample was selected using a convenience method. The invitation to participate in the study and a short description were placed on the Association of Teachers in General/Family Medicine mailing list. The main inclusion criteria were physicians who had continuously worked in a practice for the last 5 years, were willing to participate and had at least 1400 patients on the list. The exclusion criterion was an interruption of work for any reason that lasted at least 3 months. GPs who accepted the invitation and were eligible (20 of 107) were contacted by phone and selected to participate according to the order of consent and regional location. The involved practices were located in five of the six Croatian regions, thus they representing a population segment with regional specificities. Most worked in the city (four teams) and two in the suburbs. The physicians had an average of 1674 (± 152) patients on the list. Considering the number of patients in care and similar places of work, all GPs had roughly equal workloads according to Croatian standards.

We used the GPower programme to calculate the sample size of the patients on the list of each GP. According to the programme, the recommended sample sizes for the t-test, χ^2 test and analysis of variance (ANOVA) were 111, 220 and 400, respectively.²⁰

Patient and public involvement

Patients and/or the public were not involved in the design, conduct, reporting or dissemination plans of this research.

Statistical analysis

Descriptive statistics was applied by medians as the measure of central tendency, and SD as the measure of dispersion. Inferential statistics was performed using ANOVA, t-test for independent samples, χ^2 test, Spearman (ρ) correlation coefficient and Mann-Whitney U test. Statistical significance was considered at a p value<0.05.

Statistical analysis was performed using SPSS V.26.0.

Quality assessment

The accuracy of the measured data was not additionally controlled owing to methodological constraints. The final control of the data was performed by the first author.

RESULTS

The population under the care of the 6 GP teams was 10 125 (51.4% women), with a median age of 53.1±15.9 years. There were no significant differences between the sexes (p<0.05).

Before the pandemic, from April to June 2019, a total of 22 847 consultations (FTFC and VC) were recorded, while in the same period in 2020 the number of all consultations (19 686) decreased by 13.8%. According to the structure of visits, FTFC decreased from 58.1% of the total number of visits in 2019 to 41.2% in 2020, while VC increased from 41.9% in 2019 to 58.8% in 2020.

In the second pandemic year (April–June) 2021, the number of FTFC and VC increased by 38.3% compared with 2020. Furthermore, an eightfold increase in email consultations compared with 2019 was recorded. Major changes occurred in the work organisation, as measured by the type of consultation. We confirmed these observations using an ANOVA (figure 1).

Scheffe’s test indicated that the number of VCs was significantly higher in 2020 and 2021 compared with 2019. There was an increase in the total workload (9.4%) in 2021 compared with 2019.

In the second phase of the study, after the third wave of the pandemic, 1928 patients (women, n=970, 50.3%) participated in 3207 consultations (median age 52.8±16.7 years).

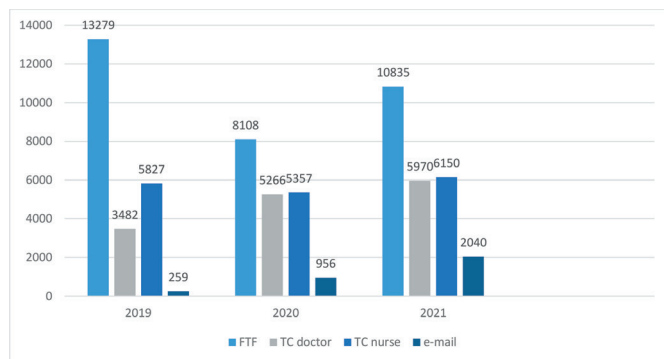


Figure 1 Changes of the types of consultation with general practitioners during 2019, 2020 and 2021. FTF, face to face; TC, telephone consultation.

Table 1 The average length of face-to-face and telephone consultations according to sex in minutes

	Face-to-face consultation		Telephone consultation		
	\bar{x}	SD	\bar{x}	SD	
Female	7.08	3.40	4.19	2.14	t=6.254, p<0.0001
Male	7.18	3.35	3.42	2.06	t=9.266, p<0.0001
Total	7.13	3.38	4.01	2.09	t=7.038, p<0.0001
	t=0.411, p=0.681		t=-2.130, p=0.034		

Regarding education and employment, majority were patients with a secondary education degree (60.7%) and were employed (47.8%). VC was dominant during this period (61%) and mostly used by younger people. The average length of an FTFC and TCs were 7.13±3.38 and 4.01±2.09 min, respectively. The length of each consultation type according to patient sex is shown in table 1.

Results were examined using a t-test for independent samples. An FTFC was significantly longer compared with a TC (t=7.038, p<0.0001).

There was no statistically significant difference in the length of FTFC between men and women (t=0.411, p=0.681). However, women had significantly longer consultations by phone (t=-2.130, p=0.034).

Longer lengths of FTFC and TC, as well as consultations regarding chronic problems, were observed in elderly patients. A longer length in TC was recorded among patients who were unemployed and retired compared with other categories (7.0, p=0.013), while the shortest length was recorded in consultations related to children (3.5, p<0.001). The relationship between the reasons for consultation and patients’ age was examined by linear correlation. The corresponding coefficient between age and reasons for consultation is presented in table 2.

Chronic diseases were the main reason for consulting GPs (42.4%). Almost every fifth consultation was related to administrative issues (prescriptions, various certificates, sick leave, etc). A total of 4.2% of all consultations during the 14-day period were related to COVID-19.

The χ^2 test showed that acute and chronic diseases were statistically more significant reasons for consultation compared with others ($\chi^2=7.751$, p=0.034). There was no statistically significant difference in the reasons for consultation regarding the type of consultation (FTFC or TC) ($\chi^2=4.955$, p=0.292).

DISCUSSION

Principal findings

To the best of our knowledge, this was the first study to deal with changes in the types and length of consultations in family medicine at different stages of the COVID-19 pandemic in Croatia. Our findings suggest that despite a decrease in FTFC, the total workload did not decrease, primarily due to the enormous increase in the number



Table 2 Correlations of patients' age with reasons for consultation

Reasons for consultation	Spearman coefficient	P value
Age/acute disease	0.211	<0.0001
Age/chronic disease	0.378	<0.0001
Age/malignant disease	0.151	<0.0001
Age/COVID-19	0.078	0.002
Age/administration	0.063	0.013
Age/live contact	-0.212	<0.0001
Age/phone contact	0.301	<0.0001

of VCs. In almost all countries worldwide, GPs quickly changed the way they provided care, and remote consultations were conducted to prevent the transmission of the infection and minimise professional risks for healthcare workers.^{16 17 22 23} This was consistent with the results of our study. VCs were mostly used for health promotion, triage and the long-term management of patients with chronic diseases. Although, according to earlier research,^{3 11} there was resistance to the introduction of VC both among doctors and patients, and the new situation led to significant changes. In accordance with Gray *et al's* study, we found that there was a significant decrease in FTFC in 2020 compared with in 2019 (17%) as well as increase in VCs (21%).²⁴ Given the low rate of use of VCs in the pre-pandemic period, this increase was expected. Considering previous research, it was expected that the workload would decrease with the introduction of VCs.^{6 7} Our results showed that this did not happen. Patients used FTFC in 2021 almost as in the pre-pandemic level; however, the use of VCs continued to grow exponentially. Czeisler *et al* obtained similar results regarding an increased use among all forms of VC; however, they dealt with the influence on GPs income rather than workload.²⁵

In the second phase of the study, we showed that the length of an FTFC (7.1±3.4min) was shorter compared with that before the pandemic. In a previous work by Croatian authors, the length of an FTFC was 11.5 (±5.5) minutes.²⁶ Hence, these results of consultation length measurements corresponded with the results of Newhouse *et al*, where the overall length was 10.3min, of which 4min were related to a triage TC by the GPs.²⁷ In any circumstances, the 4min of TC may be sufficient for patients to obtain enough information regarding brief advice or making an appointment. In a study by Hammersley *et al*²⁸, the mean length of an FTFC was 9.6min, which was 4.1min longer than TCs on average. Furthermore, they concluded that TC was suitable for simple problems that did not require a physical examination.²⁹ Most studies showed a positive correlation on patient satisfaction as well as the quality of care provided and a positive relationship with the length of the consultation.^{30–32} However, Hammersley *et al* questioned this correlation.²⁸ In contrast, Joy *et al* did not find enough

evidence to support these theories.³³ We believe that FTFC lasted shorter due to the increased number of VCs. Further research is required to determine the impact of shortened FTFC on the quality of care and patient satisfaction. In the total working hours, VC occupies a significant proportion. We have further demonstrated that VC and FTFC have continued to grow in the downward trend of the pandemic. However, VC has continued to increase compared with FTFC. These results were consistent with those obtained by Eisele *et al*¹⁸

A cross-sectional study in the UK during the COVID-19 pandemic also showed that the number of TCs among GPs is more than doubled, while FTFC and home visits fell by 64.6% and 62.6%, respectively. Remote consultation comprised 18.4% of all FTFC at baseline and 56.6% by the end of the study period.³⁴

We divided the reasons for consultations into five groups, and chronic diseases was the most common reason, followed by acute illnesses unrelated to COVID-19. During the observation period, the cumulative 14-day rate of COVID-19 for the Republic of Croatia was 59.2/per 100 000 inhabitants, and the proportion of positive tests in the total number of tests was 3.0%. Therefore, the reasons for visits related to COVID-19 were relatively weak.³⁵ The results of a Dutch study showed that acute and chronic health problems and prevention decreased from the beginning of the COVID-19 pandemic.³⁶

Although other authors noted a significant increase in VC conducted by nurses, this was not the case in our study. Telephone triage represented a method for short advice and searching for an appointment for an FTFC. Earlier studies showed that nurse triage led to a 28% reduction in patient–physician contact, and a 31% reduction in FTFC, with a related reduction of 1.4min in overall physician contact time.²⁷ Hence, we concluded that the number of TCs with nurses did not increase since the nurse telephone triage was already a reason for shortened live consultations. There were agreements between both GPs and patients on the benefits of VC opportunities; however, there were also potential downsides, especially when considering that there are no guidelines on proper implementation. Patients need support to make the best health decisions. In addition, healthcare professionals need advanced skills to operate the technology safely and reliably and provide relevant information to maximise the impact of VC.^{37 38}

Strengths and limitations of this study

Our research was based on data from EMR of GP practices and an accurate measurement of the time spent in FTFC and TC, in real-time and working conditions, which is its main advantage. Since it is the first of its kind in Croatia, the results can serve as a starting point for broader research, with the involvement of a larger number of teams. Creating a model for predicting the length of consultations and GP's workload in periods of mass public health threats is of great importance not only for the health system in Croatia but more widely. The

main limitations of this study are the too-small sample of GPs and the selection by convenience sampling. The results of monitoring the number and length of consultations cannot, therefore, be generalised to the population of GPs in Croatia. Also, the lack of long-term data on the length of FTFC and VC prevents reliable comparisons of the workload before and after the onset of the COVID-19 pandemic.

Future research

COVID-19 has substantially changed primary care practices due to new needs and new health problems of the population. This could be a challenge in health systems that already have a VC tradition, but also in countries such as Croatia, where VC was introduced mainly due to emerging needs during the pandemic. Remote consultations offer potential improvements in patient access and appointment flexibility. Further research is needed to examine satisfaction for both patients and health workers, considering people who have limited access to technology or inability to use it. It is also important to know whether the increased number of VCs affects healthcare professional workload, and what would be the risk of compromising the quality of care.

CONCLUSION

GPs faced increasing demands in their everyday work so the need for VC is becoming more common. However, there is a need to place this new form of communication in the appropriate legal framework as well as to provide appropriate technological and educational support for healthcare professionals and patients. More research on this topic is needed, especially regarding health outcomes, satisfaction and safety of both the patients and GPs.

Twitter Jasna Vučak @JasnaMV

Acknowledgements We would like to thank Professor Biserka Bergman-Marković and Professor Milica Katić for their support and useful suggestions for this research work.

Contributors JV, BP and AL were involved in the conception of the study and drafted the first version of the manuscript. JV, BP, AJ, ŽV, DS and TZ were involved in data collection and data interpretation. AL and ŽV were involved in data analysis. JV, BP, AL, ŽV, DS and TZ read and approved the final manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Ethics approval was granted prior to initiating the study from the Ethics Committee of Health Centre Kutina (Ref. No. 2176-122-02-856-21).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. With permission, source data are available upon request from the NHS Electronic Staff Record (ESR) Warehouse (NHS England).

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially,

and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Jasna Vučak <http://orcid.org/0000-0003-4328-531X>

REFERENCES

- Odluka o zabrani napuštanja mjesta prebivališta i stalnog boravišta u RH od 23. *Narodne Novine* 2020;737. /eli/sluzbeni/2020/35/737 Available: https://narodne-novine.nn.hr/clanci/sluzbeni/2020_03_35_737.html
- NEJM Catalyst. *What is telehealth?* NEJM Catalyst, 2018: 1. Available: <https://catalyst.nejm.org/doi/full>
- Edwards HB, Marques E, Hollingworth W, *et al.* Use of a primary care online consultation system, by whom, when and why: evaluation of a pilot observational study in 36 general practices in South West England. *BMJ Open* 2017;7:e016901
- Downes MJ, Mervin MC, Byrnes JM, *et al.* Telephone consultations for general practice: a systematic review. *Syst Rev* 2017;6:128
- Car J, Sheikh A. Telephone consultations. *BMJ* 2003;326:966–9.
- Bunn F, Byrne G, Kendall S. The effects of telephone consultation and triage on healthcare use and patient satisfaction: a systematic review. *Br J Gen Pract* 2005;55:956–61.
- Chapman JL, Zechel A, Carter YH, *et al.* Systematic review of recent innovations in service provision to improve access to primary care. *Br J Gen Pract* 2004;54:374–81.
- Brant H, Atherton H, Ziebland S, *et al.* Using alternatives to face-to-face consultations: a survey of prevalence and attitudes in general practice. *Br J Gen Pract* 2016;66:e460–6.
- Atherton H, Brant H, Ziebland S, *et al.* Alternatives to the face-to-face consultation in general practice: focused ethnographic case study. *Br J Gen Pract* 2018;68:e293–300.
- Davis K, Doty MM, Shea K, *et al.* Health information technology and physician perceptions of quality of care and satisfaction. *Health Policy* 2009;90:239–46.
- Hanna L, May C, Fairhurst K. The place of information and communication technology-mediated consultations in primary care: GPs' perspectives. *Fam Pract* 2012;29:361–6.
- Pravia CI, Diaz YM. Primary care: practice meets technology. *Cleve Clin J Med* 2019;86:525–8.
- World Health Organization, UNICEF. A vision for primary health care in the 21st century: towards universal health coverage and the sustainable development goals. 2018. Available: <https://apps.who.int/iris/handle/10665/328065> [Accessed 1 Nov 2022].
- Saint-Lary O, Gautier S, Le Breton J, *et al.* How GPs adapted their practices and organisations at the beginning of COVID-19 outbreak: a French national observational survey. *BMJ Open* 2020;10:e042119
- Wanat M, Hoste M, Gobat N, *et al.* Transformation of primary care during the COVID-19 pandemic: experiences of healthcare professionals in eight European countries. *Br J Gen Pract* 2021;71:e634–42.
- Murphy M, Scott LJ, Salisbury C, *et al.* Implementation of remote consulting in UK primary care following the COVID-19 pandemic: a mixed-methods longitudinal study. *Br J Gen Pract* 2021;71:e166–77.
- Turner A, Scott A, Horwood J, *et al.* Maintaining face-to-face contact during the COVID-19 pandemic: a longitudinal qualitative investigation in UK primary care. *BJGP Open* 2021;5:BJGPO.2021.0036
- Eisele M, Pohontsch NJ, Scherer M. Strategies in primary care to face the SARS-cov-2 / COVID-19 pandemic: an online survey. *Front Med (Lausanne)* 2021;8:613537
- Haldane V, Zhang Z, Abbas RF, *et al.* National primary care responses to COVID-19: a rapid review of the literature. *BMJ Open* 2020;10:e041622
- Statistical power analyses for mac and windows. n.d. Available: <https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower>
- World Health Organization. Role of primary care in the COVID-19 response. no.WPR/DSE/2020/004. WHO regional office for the western pacific. 2020. Available: <https://apps.who.int/iris/handle/10665/331921> [Accessed 2 Nov 2022].
- Mughal F, Mallen CD, McKee M. The impact of COVID-19 on primary care in Europe. *Lancet Reg Health Eur* 2021;6:100152:100152.
- World Health Organization. COVID-19: occupational health and safety for health workers: interim guidance. n.d. Available: https://www.who.int/publications/i/item/WHO-2019-nCoV-HCW_advice-2021-1



- 24 Gray DP, Sidaway-Lee K, Harding A, *et al.* Reduction in face-to-face GP consultations. *Br J Gen Pract* 2020;70:328.
- 25 Czeisler ME, Marynak K, Clarke KEN, *et al.* Delay or avoidance of medical care because of COVID-19-related concerns-United States, June 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:1250–7.
- 26 Xu Z, Fan J, Ding J, *et al.* The impact of COVID-19 on primary care general practice consultations in a teaching hospital in shanghai, china. *Front Med (Lausanne)* 2021;8:642496.
- 27 Newhouse N, Lupiáñez-Villanueva F, Codagnone C, *et al.* Patient use of email for health care communication purposes across 14 European countries: an analysis of users according to demographic and health-related factors. *J Med Internet Res* 2015;17:e58
- 28 Hammersley V, Donaghy E, Parker R, *et al.* Comparing the content and quality of video, telephone, and face-to-face consultations: a non-randomised, quasi-experimental, exploratory study in UK primary care. *Br J Gen Pract* 2019;69:e595–604.
- 29 Wolthers TO, Wolthers OD. Telephone consultation as a substitute for face-to-face consultation during the COVID-19 pandemic. *Dan Med J* 2020;67:A04200300
- 30 Schäfer I, Hansen H, Menzel A, *et al.* The effect of COVID-19 pandemic and lockdown on consultation numbers, consultation reasons and performed services in primary care: results of a longitudinal observational study. *BMC Fam Pract* 2021;22:125
- 31 Ozvacić Adžić Z, Katić M, Kern J, *et al.* Patient, physician, and practice characteristics related to patient enablement in general practice in Croatia: cross-sectional survey study. *Croat Med J* 2008;49:813–23.
- 32 Holt TA, Fletcher E, Warren F, *et al.* Telephone triage systems in UK general practice: analysis of consultation duration during the index day in a pragmatic randomised controlled trial. *Br J Gen Pract* 2016;66:e214–8.
- 33 Joy M, McGagh D, Jones N, *et al.* Reorganisation of primary care for older adults during COVID-19: a cross-sectional database study in the UK. *Br J Gen Pract* 2020;70:e540–7.
- 34 Croatian Institute of Public Health. Weekly reports of the croatian institute of public health. 2021. Available: <https://www.koronavirus.hr/tjedna-izvjesca-hrvatskog-zavoda-za-javno-zdravstvo/854> [Accessed 6 Oct 2022].
- 35 Schers H, van Weel C, van Boven K, *et al.* The COVID-19 pandemic in nijmegen, the netherlands: changes in presented health problems and demand for primary care. *Ann Fam Med* 2021;19:44–7.
- 36 Lopez Segui F, Hernandez Guillamet G, Pifarré Arolas H, *et al.* Characterization and identification of variations in types of primary care visits before and during the COVID-19 pandemic in catalonia: big data analysis study. *J Med Internet Res* 2021;23:e29622
- 37 van Hattem NE, Silven AV, Bonten TN, *et al.* COVID-19's impact on the future of digital health technology in primary care. *Fam Pract* 2021;38:845–7.
- 38 Brørs G, Norman CD, Norekvål TM. Accelerated importance of ehealth literacy in the COVID-19 outbreak and beyond. *Eur J Cardiovasc Nurs* 2020;19:458–61.