

BMJ Open First contact with the health system: a survey study in northern Portugal

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ABSTRACT

Objective The objective of this study is to characterise the self-reported first contact with the health system and the reasons stated for each choice, testing associations with population characteristics.

Design Cross-sectional survey.

Setting Primary care department of a local health unit in northern Portugal.

Participants Random sample of 4286 persons, retrieved from all registered adults.

Outcomes Participants who stated they usually see the same doctor when a health problem arises were considered to adopt first-contact care and were asked to identify their regular doctor. Participants were asked why they adopt first-contact care or why they choose to do otherwise. Associations between personal characteristics and the adoption of first-contact care were tested using logistic regression.

Results There were 808 valid questionnaires received (19% response rate). The mean age of respondents was 53 years, 58% were women and 60% had a high school or higher degree. Most (71%) stated always seeing the same doctor when facing a health problem. This was a general practitioner (GP) in 84%. The main reasons were previous knowledge and trust in the doctor. When this doctor was not a GP, the main reason was the need to obtain an appointment quickly. Participants who chose first-contact care were less likely to have university degrees than those who did not (OR 0.31; 95% CI 0.13 to 0.76). Being registered with the same GP for over 1 year increased the odds of adopting first-contact care: twice as likely for those registered for 1–4 years with the same GP (2.07; 95% CI 1.04 to 4.11), and three times more likely for those registered for over 10 years (3.21; 95% CI 1.70 to 6.08).

Conclusions The high adoption of first-contact care and the reasons given for this suggest a strong belief in primary care in this population. The longer patients experience continuity, the more they adopt first-contact care. The preferences of higher-educated patients regarding first-contact care deserve reflection.

INTRODUCTION

Primary care-based systems require the existence of a point of first contact to enter the system whenever care is needed.¹ Most often, this point of first contact is a general practitioner (GP).² Repeated access to the same provider is one aspect of continuity of care. Continuity of the team and of the medical record are also important for high-quality

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is the first study exploring how and why patients make their first contact with the health care system in Portugal.
- ⇒ We used a large random sample from the list of all registered persons of a primary care-based population, irrespective of user status. However, conclusions cannot be drawn for the whole Portuguese population.
- ⇒ We used a non-validated questionnaire, with the first-contact question drawn and adapted from the 'Quality and costs of primary care in Europe (QUALICOPC) patient experiences questionnaire'.
- ⇒ The response rate was low. The online response rate was 35% but the paper survey achieved only 10%. However, the paper questionnaires improved the representation of participants who are typically underrepresented in survey studies.

care.³ Continuity improves both patient outcomes^{4 5} and patient satisfaction.⁶ It is believed to reduce unnecessary diagnostic and treatment interventions,^{1 7} to allow for more rational use of limited healthcare resources,⁸ and to increase the effectiveness of both GPs and hospital specialists.^{8 9} By seeing their patients over time and in their natural context, GPs are more likely to distinguish psychosocial suffering from a biomedical disease,⁸ self-limited conditions from those that need treatment, and symptoms that can be safely relieved without investigation from those that warrant a diagnostic workup.

The organisation of first-contact care varies across health systems.¹⁰ Gatekeeping is the term usually applied to mandatory first-contact, meaning that a patient must visit a GP before seeing a secondary care specialist.¹¹ Mandatory gatekeeping is less satisfactory to patients,¹¹ is seen as a potential cause of delay in diagnosis and treatment¹² and has less sound evidence for its beneficial effects on health outcomes.¹¹ Nevertheless, in countries with no mandatory gatekeeping in place, many patients still choose a GP for first-contact care.¹³

The Portuguese National Health Service provides universal coverage for a wide range

of services. In the public sector, gatekeeping is mandatory for access to secondary specialty care. In the private sector, patients who can pay have the choice to access secondary care whenever they believe it is needed. Primary care, mental health and oncology care are free and low user fees apply for access to public secondary care. However, among members of The Organization for Economic Cooperation and Development (OECD), Portugal ranks as the fifth worst country regarding out-of-pocket health expenditure.¹⁴ Households spend 4.7% of their consumption in healthcare compared with the OECD average of 3.1%. Private outpatient services make up 52% of this, which is the highest in the OECD.¹⁴ In the private health sector, fragmented secondary specialist care often supplants first-contact care. Indeed, like most of western Europe countries, Portugal seems to be reducing first-contact care.¹⁵ This hinders the benefits of continuity and challenges the commitment to the principles and values of primary care. In Portugal, out-of-pocket health expenses are not reimbursed for the general population.¹⁴ They can be deducted from income tax, but many affected households belong to the poorest income quintile and are already tax-exempt.¹⁴ Partial reimbursement is possible for the 28%–33% of the population who purchase private health insurance^{14 16} and for the 12% who are beneficiaries of an insurance-like fund¹⁷ available for some public servants.

The way patients reach the health system in Portugal has received little attention. International research has found that older, less educated patients and frequent users of healthcare value first-contact with a GP and continuity of care, compared with younger and more educated patients who value direct access to secondary specialist care and timeliness of access.¹⁸ These findings need to be reassessed as the population ages and following the challenges posed by the COVID-19 pandemic. Understanding how patients contact the health system and knowing the reasons for their choices are necessary for health systems to adapt the ways they provide care.

The objectives of this study were to characterise the self-reported types of first contact with the healthcare system in the study population, to describe the reasons for each choice and to test the associations between the choice of service for first contact and patient characteristics and views.

METHODS

This study is part of a larger cross-sectional study on patient access to GPs.¹⁹

Questionnaire development

A self-administered, structured, anonymous questionnaire was designed by the researchers. The development of the questionnaire comprised three phases: (1) a literature review and first version by the three authors; (2) an iterative process of improvement involving other researchers, GPs and laypeople and (3) a pilot study.

In stage 1, comparable studies and questionnaires were reviewed^{20–30} to ensure appropriate inclusion of all relevant domains, and to provide examples of wording and layout. Most questions were phrased by the authors, but a few were adapted from two questionnaires. For the ‘first-contact question’ used in this study, participants were asked what they would do when a health problem arises. We adapted the original question from the ‘QUAL-ICOPC patients experiences questionnaire’,²⁸ to cover a wider range of options (such as not seeing any doctor and not having experience of any health problems). If participants answered they usually see the same doctor, they were considered to adopt first-contact care and were asked to identify their regular doctor as a public service GP or another provider. We added another question to explore why they chose to see a particular doctor for first-contact for their health issues or why they chose to do otherwise. In stage 2, we conducted an iterative process of improvement involving a convenience sample of other researchers and GPs who gave their feedback on the structure of the questionnaire, on the wording of the questions, and on its content validity. The wording of the first contact question was discussed with a convenience sample of 17 lay persons, two of whom reviewed the full questionnaire regarding wording, length and cognitive burden. In stage 3, the pilot study, a convenience sample of 104 primary care patients, from 4 different family practices, answered both the paper (n=81) and the online (n=23) versions of the questionnaire. The comments provided by these patients, as well as field observations and analysis of the responses, led to changes in the final version of the questionnaire. The study questionnaire is included in online supplemental file.

Sampling and recruitment

Using the Oracle random number generator, a random sample of 4286 individuals was obtained from the adult population (n=151 081) registered in the Primary Care department of Matosinhos Local Health Unit. This is a group of 14 public family practices in Matosinhos, northern Portugal. Matosinhos is a municipality with 172 557 inhabitants, displaying an age distribution similar to the Portuguese population, with differences in educational levels. Illiteracy affects 4% of Matosinhos inhabitants, compared with 6% of the national population. Matosinhos Local Health Unit has nearly full coverage of public sector GPs, with 98% of registered patients having an assigned GP in 2021, compared with 90% of the national population in 2021.

Sample size was calculated for an expected proportion of 50% on most outcomes (the most conservative approach), with a confidence level of 95%, and a margin of error of 5%. Considering the population size, the number obtained was 384, which was further increased to 600 to allow power for inferential statistics. It was further increased to cover an expected response rate of 14%. The response rate considered an expected rate of updated address information of 70% and a response rate of 20%

among those who would receive an invitation to participate. Applying a 14% response rate to the 600 persons, we obtained a target sample of 4286 persons to invite.

Between May and June 2021, selected patients were invited by email to complete the questionnaire online, if they had an email address on their record. If they had no email address, they were sent a paper version of the same questionnaire. Two weeks later, one reminder invitation was sent to participants with an email available. Due to budget constraints, no reminders were sent to participants who had been sent a paper questionnaire. Sampling and recruitment procedures were handled by Matosinhos Local Health Unit Information Technology department, so the researchers had no access to any personal data of the selected sample.

Analysis

Descriptive statistics were used to characterise the study sample by age, sex, education and job status, as well as internet access, years registered with the same GP, and perceived health status. Study participants were compared with the target sample regarding anonymised information provided by the information and technology department. Data on sex and age were available for the target sample, whereas education was recorded for 52% ($n=2236$). Participants were also compared as to mode of questionnaire response. A sensitivity analysis was conducted to assess the impact of the mode of questionnaire administration on the association between socio-demographic and health characteristics and adoption of first-contact care. For that, we restricted the analysis for the group of patients who answered the questionnaire online. Comparisons between groups were tested with Student's *t*-test for continuous variables and with χ^2 and Fisher's exact tests for categorical variables. Significance was set at a level of $p<0.05$. Logistic regression analysed the association between participant characteristics and the adoption of first-contact care, adjusting for socio-demographic and health characteristics (self-perceived health status and years registered with the same GP). ORs with 95% CIs were calculated for all models. Missing data were deleted pairwise. IBM SPSS Statistics for Windows, V.27.0. was used for the analysis.

Patient and public involvement

Laypeople were involved in stages 2 and 3 of the development of the questionnaire.

RESULTS

A total of 808 valid questionnaires (556 online and 252 paper responses) were returned. Out of all posted questionnaires, 73 were returned as not delivered, resulting in an overall response rate of 19% (35% for the online questionnaire and 10% for paper forms). The question about first contact was answered by 792 participants (98%), of which 540 were online and 252 were paper responses. Responders' ages ranged from 18 to 93 (mean

53.4 years, SD 17.37) and 58% were women. Most participants were employed, had at least a high-school degree, had internet access, were registered with a GP for at least 5 years and perceived their health status as good or very good (table 1).

Online participants were significantly different from participants responding to the questionnaire on paper. Paper participants were older, more often males, retired, with lower education levels, less often with internet access, were registered with a GP for a longer time and had poorer self-perceived health status (table 1). Compared with the total sample, respondents were more likely to be females, and attained higher education levels (table 1).

Most participants (71%) stated they usually see the same doctor when they have a health problem. This was the case for 100% of paper participants and 58% of online participants. Most often (85%), the same doctor is the responder's GP. A total of 18% of participants stated they would see different doctors, while 9% stated they do not usually have health problems (table 2).

The reasons most often stated for seeing the same doctor were that the doctor knows the person, and is trusted (table 3), with 75% of participants stating at least one of these two reasons. However, among responders who see a doctor other than their GP, the reason most often stated is it is a means to obtain an appointment quickly (67%), followed by being known to the doctor (56%), trust (37%), and convenient visit hours (28%). The third and fourth reasons given to have a GP as a point of first contact were being affordable (23%) and nearby (23%), while having no choice was stated by 7%. Most reasons given to see the same doctor did not differ according to the mode of questionnaire administration.

The reasons most often stated for seeing different doctors (all cases were online responders) were looking for a doctor specialised in the problem of concern (56%) and depending on the visit being due to an urgent problem or routine (32%) (table 4).

Responders who usually see the same doctor when they face a health problem differ from those who vary the doctor they see (table 5). Participants with a university degree were three times less likely to report adoption of first-contact care than those with an education level of 4 years or less (OR 0.31; 95% CI 0.13 to 0.76). Being registered with the same GP for over 1 year increased the odds of adopting first-contact care. This is a 'dose-response' relationship: those registered for 1–4 years with the same GP were twice as likely to have a point of first-contact (2.07, 95% CI 1.04 to 4.11), while those registered for over 10 years were three times more likely to have a point of first-contact (3.21, 95% CI 1.70 to 6.08).

The results of the sensitivity analysis were similar to those of the main analysis (online supplemental table 1). The only difference found when comparing the online subsample with the whole sample was an attenuation of the 'dose-response' effect observed for the association between the number of years with a GP and adopting first-contact care.

**Table 1** Sociodemographic characteristics of 792 patients registered in primary care in Portugal, according to the mode of questionnaire administration and comparing with the original sample (2021)

	All responders n=792	Online responders n=556	Paper responders n=252	Online versus paper P value	Original sample n=4286	Original sample versus responders P value
Age (years)						
Mean (SD)	53.4 (17.37)	49.6 (16.42)	61.0 (16.71)	<0.001	52.2 (18.53)	0.098
Median	53	48	64		52	
Minimum	18	18	19		18	
Maximum	93	92	93		103	
	n (%)					
Sex						
Female	417 (58.0)	291 (60.9)	126 (52.3)	0.027	2228 (52.0)	0.003
Education (completed grade)						
≤4th	153 (21.2)	62 (12.9)	91 (37.6)	<0.001	665 (29.8)	<0.001
6th or 9th	137 (19.0)	75 (15.7)	62 (25.6)		578 (25.8)	
11th or 12th	200 (27.7)	150 (31.3)	50 (20.7)		539 (24.1)	
University	231 (32.0)	192 (40.1)	39 (16.1)		454 (20.3)	
Job status						
Employed	361 (51.4)	281 (59.5)	80 (34.6)	<0.001		
Retired	214 (30.4)	105 (22.2)	109 (47.2)			
Unemployed	55 (7.8)	40 (8.5)	15 (6.5)			
Other	73 (10.4)	46 (9.7)	27 (11.7)			
Internet access						
Yes	622 (78.5)	450 (83.3)	172 (68.3)	<0.001		
Years registered with GP						
0 to <1	91 (12.1)	64 (12.5)	27 (11.2)	0.025		
1 to 4	163 (21.6)	124 (24.3)	39 (16.1)			
5 to 10	198 (26.3)	135 (26.4)	63 (26.0)			
> 10	301 (40.0)	188 (36.8)	113 (46.7)			
Self-perceived health status						
Poor	80 (11.3)	40 (8.3)	40 (17.6)	<0.001		
Fair	210 (29.7)	117 (24.3)	93 (41.0)			
Good	226 (31.9)	166 (34.5)	60 (26.4)			
Very good	192 (27.1)	158 (32.8)	34 (15.0)			
Bold: p<0.05						
GP, general practitioner.						

DISCUSSION

Main findings

This study of access to healthcare in Portugal found that most participants had a regular point of first contact with the healthcare system and, most often, this was with a GP in the public sector. The main reasons stated for choosing this option were that the GP has previous knowledge of the person and their health problems, trust in the GP, affordable costs and the presence of a GP nearby. A few respondents stated they had no other choice than the GP for first access to care. For participants whose point of first contact was a doctor other than a GP in the public sector,

the reasons most often given were getting an appointment quickly, 'being known' to the doctor and trusting the doctor. Participants with a university degree were less likely to adopt first-contact care. Being registered with the same GP for a longer time had a 'dose-response' positive relationship with the odds of adopting first-contact care.

Strengths and limitations

To our knowledge, this is the first study exploring how patients make their first contact with healthcare in Portugal and the reasons for their choices. In the absence of published data on patient response rates in Portugal,

Table 2 Responders' conduct when they have a health problem, according to the mode of questionnaire administration (2021)

	All responders n=792	Online responders n=540	Paper responders n=252
If having a health problem	%		
Sees same doctor	71.1	57.6	100
Sees different doctors	18.2	26.7	0
Does not see any doctor	1.1	1.7	0
Has no health problems	8.5	12.4	0
Other	1.1	1.7	0
	n=554*	n=309	n=245
If seeing same doctor, who?	%		
GP	84.8	83.8	86.1
private clinic	11.9	14.2	9.0
relative/friend	0.9	0.3	1.6
Other	2.3	1.6	3.3

*Nine responders stated they would always see the same doctor but did not answer who this doctor was.
GP, general practitioner.

we adopted a conservative approach for sample size calculation. We recruited a good size random sample from the list of all registered persons of an adult primary care-based population, irrespective of user status. However, conclusions cannot be drawn for the whole Portuguese population. Another limitation is that the questionnaire used was not validated. It was constructed after a literature search for validated questionnaires, an iterative process of face and content validity and a pilot study. The first-contact question was drawn from the 'QUALICOPC patients experiences questionnaire',²⁸ adapted to include a wider range of options. There are concerns about the response rate. The original sample size calculation suggested that a sample of 384 was required and this was exceeded with

808 valid responses received. A more conservative sample size calculation was used to allow for various reasons for non-response, giving a response rate of 19%. The online response rate was 35% but the paper survey achieved only 10%. This may be partly explained by the fact that, due to budget constraints, we were not able to send a reminder to paper participants, a technique known to improve response rates.³¹ Nonetheless, paper questionnaires increased the representation of more male and less educated participants, minimising the typical non-response bias in surveys. This bias, that typically leads to an over-representation of females and of higher educated participants, was confirmed in our study when comparing participants with the original sample. However, our

Table 3 Reasons stated by responders to see a particular doctor when they have a health problem, according to doctor seen and mode of questionnaire administration (2021)

Reasons for seeing the same doctor*	Total n=563**	GP n=470	non GP n=84	Online participants n=311	Paper participants n=252	Online versus paper P value
	%					
Doctor knowing the person	62.1	62.9	56.1	63.6	60.3	0.420
Trust	44.5	46.5	36.6	45.1	43.7	0.726
Quick appointments	23.0	15.6	67.1	26.9	18.3	0.015
Being nearby	21.6	22.6	17.1	22.1	21.0	0.765
Being cheap	20.5	22.8	7.3	25.3	14.7	0.002
Convenient visit hours	9.5	6.2	28.0	10.4	8.3	0.408
no choice	6.1	7.0	1.2	4.5	7.9	0.095

**Nine responders stated they would always see the same doctor but did not answer who this doctor was.
Bold: p<0.005
*Responders could choose more than one reason.
GP, general practitioner.

Table 4 Reasons stated by responders to vary the doctor they see when they have a health problem (2021)

Reasons for seeing different doctors*	n=139
	%
Looking for specialist in the problem of concern	56.1
Depending on being urgent or routine	32.4
Always attending same facility	21.6
Quick appointments	16.5
Convenient visit hours	11.5
Other reasons	6.5

*Responders could choose more than one reason.

sensitivity analysis suggests that the mode of questionnaire administration did not affect logistic regression results. To further minimise non-response bias, the analysis controlled for participants' characteristics typically

associated with selective non-response including sex, age, education and self-perceived health status. However, we cannot rule out other unknown characteristics associated with selective non-response, including those that may be related to first contact with the healthcare system. Finally, the possibility of information bias must be considered, as in any survey-based research.

Comparison with existing literature

There may also be concerns regarding the applicability of our findings in other countries. Comparison with published findings from other settings reveals striking similarities. The reasons most often stated for the choice of first-contact care reflect three core features of general practice: continuity of care (with previous knowledge of the patient), trust (a therapeutic relationship) and accessibility.^{18 32} They also match patients' preferences in the general practice context³³ and show a connection between continuity and access.

Table 5 Results of logistic regression models estimating the association between adopting first-contact care and sociodemographic and health characteristics in 792 primary care patients in Portugal (2021)

		OR (95% CIs)		
		Crude	Adjusted SD	Adjusted SD+health
Sex	Female			
	Male	1.11 (0.75 to 1.65)	0.82 (0.54–1.26)	0.79 (0.50–1.24)
Age	<40			
	40–54	1.58 (0.96 to 2.60)	1.34 (0.79–2.26)	1.03 (0.58–1.82)
	55–64	2.00 (1.11 to 3.59)	1.57 (0.82–3.00)	1.20 (0.59–2.46)
	65–74	4.21 (2.10 to 8.45)	2.90 (0.95–8.87)	1.67 (0.53–5.24)
	≥75	3.46 (1.63 to 7.34)	1.75 (0.50–6.16)	1.21 (0.34–4.34)
Education	≤4th			
	6th or 9th	0.74 (0.33 to 1.69)	0.94 (0.38–2.34)	1.07 (0.42–2.76)
	11th or 12th	0.36 (0.18 to 0.73)	0.51 (0.22–1.20)	0.64 (0.26–1.60)
	University	0.18 (0.09 to 0.34)	0.24 (0.11–0.56)	0.31 (0.13–0.76)
Job status	Employed			
	Retired	2.50 (1.52 to 4.11)	0.98 (0.38–2.55)	1.19 (0.45–3.15)
	Unemployed	1.70 (0.76 to 3.78)	1.41 (0.62–3.22)	1.66 (0.64–4.28)
	Other	0.94 (0.52 to 1.71)	0.62 (0.32–1.20)	0.59 (0.28–1.22)
Internet access	No			
	Yes	0.61 (0.37 to 0.99)	1.07 (0.44–2.62)	1.2 (0.47–3.07)
Years with same GP	0 to <1			
	1–4	0.37 (0.21 to 0.66)	1.83 (0.94–3.59)	2.07 (1.04–4.11)
	5–10	0.48 (0.29 to 0.80)	2.66 (1.36–5.21)	2.97 (1.50–5.90)
	>10	0.93 (0.55 to 1.55)	3.09 (1.64–5.81)	3.21 (1.70–6.08)
Self-perceived health status	Poor			
	Fair	0.76 (0.34 to 1.68)	0.92 (0.39–2.16)	0.92 (0.38–2.20)
	Good	0.46 (0.21 to 0.99)	0.65 (0.27–1.53)	0.66 (0.27–1.61)
	Very good	0.29 (0.13 to 0.62)	0.54 (0.22–1.29)	0.51 (0.21–1.27)

Bold: significant OR

GP, general practitioner; Health, health characteristics include years registered with the same GP and self-perceived health status; SD, sociodemographic characteristics.

Our study confirms the negative association between higher education and the adoption of first-contact care, found in previous research.^{13 18 34} More educated patients may be unaware of the benefits of continuity of care, may value their autonomy more, or may fear delayed diagnosis and treatment.¹² First-contact care by the GP is mandatory in Portugal only in the public setting. This may convey the message that gatekeeping is used for cost-saving purposes and that, if one can afford it (as is likely with higher-educated persons), better care is believed to be provided by other specialists. In our adjusted models, age, job status and health status did not maintain significant associations with the adoption of first-contact care, in line with previous research.¹³ This suggests confounding. These variables are also highly interwoven. For instance, age is strongly associated with education in Portugal, where illiteracy rates declined from 33% in 1960 to 3% in 2021.³⁵ Illiteracy is also associated with unemployment, while being retired is more likely as people age. Education is a marker of socioeconomic status, which, in turn, is an enabler of internet access. Older persons are more likely to suffer from any disease.

Only 6% of participants stated they had their GP as a point of first contact because they felt they had no other choice. We also found a positive ‘dose–response’ relationship between the duration participants were registered with the same GP and the adoption of first-contact care. These findings may mean that first-contact care with a GP is an individual choice and that the longer patients experience GP continuity, the more they make that choice. Patients may value continuity of care even though they could afford other choices, seeing GPs more as guides than as gatekeepers.³⁶ This voluntary commitment of patients to their GP was also found in countries without mandatory GP gatekeeping.¹³

Implications for research and practice

The proportion of patients reporting first contact with a GP for access to healthcare and the reasons stated for this suggest the existence of a strong primary care culture in Portugal. The existence of a two-tier system, with different rules in the private and the public setting, may undermine the strength and confidence in primary care as the foundation of the Portuguese healthcare system. Fostering the use of the GP for first contact with healthcare and recommending it as a healthier, safer and more equitable option, in both public and private settings, could empower patients to make more informed choices, increase their satisfaction with care, and help to achieve better health outcomes.

The study identified higher-educated patients as less likely to adopt first-contact care. The experiences, motivations and preferences of these patients might be explored in further research. Their preferences for specialist care and their need for rapid access to care require clarification. Interventions targeting these patients may be effective in making family practices more appealing to them

and in providing information about the benefits of continuity of care.

Further research is needed to study the benefits of first-contact care by GPs in the Portuguese context, and to gather evidence on its benefits and harms, both in mandatory and optional settings.

CONCLUSION

The high proportion of patients choosing first-contact care and the reasons given for this suggest a strong belief in primary care in this population. The longer patients experience GP continuity, the more they adopt first-contact care. The preference of higher-educated patients to find alternatives to first-contact care deserves further reflection.

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Contributors MG conceived and designed the study protocol, including objectives, building of the questionnaire, recruitment strategy and analysis, collected the data, performed the analysis, wrote the paper and is the guarantor of the study. LA conceived and designed the study protocol, including objectives, building of the questionnaire, recruitment strategy, and analysis, and critically reviewed the paper. SC conceived and designed the study protocol, including objectives, building of the questionnaire, recruitment strategy, and analysis, and critically reviewed the paper. All authors reviewed the manuscript, read and approved the final manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Consent obtained directly from patient(s).

Ethics approval This study involves human participants and was approved by Matosinhos Local Health Unit Ethics Committee. This committee reviewed and approved the study protocol on 10/07/2020 (nr. 59/CE/JAS). Participants gave informed consent to participate in the study before taking part.

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Data availability statement Data are available on reasonable request. The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request.

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		crude	adjusted SD	adjusted SD+health
sex	female			
	male	0.86 [0.56-1.32]	0.73 [0.46-1.15]	0.70 [0.43-1.14]
age	<40			
	40-54	1.65 [0.97-2.79]	1.48 [0.85-2.58]	1.18 [0.64-2.17]
	55-64	1.37 [0.72-2.59]	1.22 [0.60-2.47]	1.05 [0.48-2.28]
	65-74	2.62 [1.24-5.51]	2.26 [0.70-7.32]	1.36 [0.39-4.70]
	≥ 75	1.61 [0.70-3.71]	1.41 [0.35-5.59]	0.94 [0.22-3.97]
education	≤ 4th			
	6th or 9th	0.99 [0.41-2.41]	0.70 [0.23-2.12]	0.68 [0.22-2.15]
	11th or 12th	0.74 [0.35-1.57]	0.56 [0.20-1.57]	0.62 [0.21-1.84]
	university	0.40 [0.20-0.81]	0.27 [0.10-0.76]	0.30 [0.10-0.89]
job status	employed			
	retired	1.46 [0.85-2.51]	0.97 [0.36-2.61]	1.22 [0.43-3.48]
	unemployed	1.61 [0.70-3.74]	1.37 [0.57-3.27]	1.44 [0.54-3.88]
	other	0.66 [0.34-1.29]	0.54 [0.26-1.13]	0.58 [0.26-1.30]
internet access	no			
	yes	0.91 [0.53-1.54]	3.17 [0.98-10.25]	3.04 [0.91-10.11]
years with same GP	0-<1			
	1-4	1.59 [0.82-3.10]	2.05 [0.98-4.29]	2.22 [1.05-4.72]
	5-10	2.85 [1.45-5.62]	2.56 [1.22-5.37]	2.76 [1.30-5.88]
	>10	2.70 [1.42-5.12]	2.69 [1.33-5.44]	2.76 [1.36-5.62]
self-perceived health status	poor			
	fair	0.84 [0.36-1.98]	1.08 [0.43-2.74]	1.17 [0.44-3.06]
	good	0.66 [0.29-1.52]	0.89 [0.35-2.25]	0.90 [0.34-2.39]
	very good	0.46 [0.20-1.06]	0.72 [0.28-1.87]	0.68 [0.25-1.86]

SD: sociodemographic characteristics; Health: health characteristics include years registered with the same GP and self-perceived health status; GP: general practitioner

Questionnaire

Accessibility to the General Practitioner

We seek to know your experiences and your opinion on the accessibility to your General Practitioner, especially during the COVID-19 pandemic.

This questionnaire is voluntary and takes around 15 minutes to fill in. This is a study for a PhD thesis that will also inquire General Practitioners [more information about the study follows on the attached leaflet]. This study has been submitted and approved by the Ethics Review Board of Matosinhos Local Health Unit.

Any queries about the study or its results can be addressed to the research team.

Email: up201707630@med.up.pt

Telephone: 912185922 or 222061820

There are no right nor wrong answers, but it is very important that you answer bearing in mind your most common experiences in the past 6 months.

Whenever you have a health problem, what do you do?

- I always, or almost, see the same doctor
- The doctor I see varies
- Usually, I don't see any doctor
- Usually, I don't have health problems
- Other option, which?

If you always, or almost, see the same doctor, who is he?

- Public sector General practitioner
- Private sector doctor
- A friend or a relative
- Other option, which?

If you see always, or almost, the same doctor, why do you see this doctor and not any other? (you may choose more than one option)

- I get an appointment quickly
- visit hours are convenient
- it is cheap
- it is near me
- he knows me and/or my health conditions
- I trust him
- I have no other choice
- Other option, which?

Why do you see different doctors when you have health problems? (you may choose more than one option)

- I attend the same facility and the doctor that sees me may vary
- I see the doctor that gives me the earliest appointment
- I see the doctor that gives me the most convenient visit hours
- depending on the health problem I see a specialist on the condition
- I like getting different opinions
- depends on the problem being urgent or routine
- depends on my financial situation
- I travel and change address often
- other reason, which?

Why don't you see a doctor when you have a health problem?

- I don't know where to go
- I don't have the time
- I can't afford transports
- I can't afford any appointments, tests or treatments
- I can't find doctors or surgeries where they speak my language
- I call the national phone line
- I do self-care
- other reason, which?

Have you ever used the family practice you are registered in?

- No
- Yes

About your family practice

If you used more than one family practice for the past 6 months, please answer considering the one you have used more often

Usually, how long does it take you to make it to your family practice?

- Up to 10 minutes
- 11 to 20 minutes
- 21 to 30 minutes
- 11 to 60 minutes
- Over 60 minutes

Regarding your family practice facilities, what do you think about...

[very poor/poor/fair/good/very good]

- The front desk
- Waiting rooms
- Consultation rooms
- Entrance and hallways

When you request in family practice an urgent appointment (for yourself or for a relative), usually do you get it...

- On the same day?
- In 1 or 2 working days?
- In 3 to 5 working days?
- After more than 5 working days?
- Usually I don't request urgent appointments

When you request in family practice a routine appointment (for yourself or for a relative), usually do you get it...

- In 1 week?
- In 2 to 3 weeks?
- In 4 to 8 weeks?
- In 9 to 12 weeks?
- After more than 3 months?
- Usually I don't request routine appointments

When you request in family practice a home visit (for yourself or for a relative), usually do you get it...

- In 1 working day?
- In 2 or 3 working days?
- In 4 or 5 working days?
- After more than 5 working days?
- Usually I don't request home visits

Over the past 6 months, how many times did you see your GP (be it for yourself or as a carer of a relative who sees the same GP)?

- not once
- 1 time
- 2 or 3 times
- 4 times or more

When you have an appointment in your family practice, usually how much do you have to wait in the waiting room after the scheduled time?

- I am seen at the scheduled time or even before that
- I wait up to 15 minutes
- I wait between 16 and 30 minutes
- I wait between 31 and 60 minutes
- I wait more than 60 minutes

How do you rate the waiting time for...

[never tried/very poor/poor/fair/good/very good]

- an urgent appointment?
- a routine appointment?
- a routine appointment in the waiting room?
- a home visit?

Are you registered with a GP in your family practice? If so, for how long are you registered with this GP?

- no
- yes, for less than 1 year
- yes, between 1 and 4 years
- yes, between 5 and 10 years
- yes, for more than 10 years

About remote contacts, over the past 6 months with the front desk, by telephone or e-mail or on the patient portal

Regarding medical prescriptions, how easy or difficult do you find the use of...
[never used/very difficult/difficult/easy/very easy]

- paper scripts?
- scripts sent by text message?
- scripts sent by e-mail?

Regarding the patient portal, how easy or difficult do you find it for...
[never used/very difficult/difficult/easy/very easy]

- booking appointments with your GP?
- request repeat prescriptions?
- insert data on your health summary?

For how long do you usually wait when you request (for yourself or for a relative)...
[never tried/1 working day/2 or 3 working days/4 or 5 working days/more than 5 working days/I have tried but never got it]

- to speak with your GP over the phone?
- a reply to an e-mail?
- a video consultation?
- repeat prescriptions at the front desk?
- repeat prescriptions on the patient portal?
- a remote medical report?
- remote review of test results?

How do you rate the waiting time when you make a request (for yourself or for a relative)...
[never tried/very poor/poor/fair/good/very good]

- to speak with your GP over the phone?
- a reply to an e-mail?
- a video consultation?
- repeat prescriptions at the front desk?
- repeat prescriptions on the patient portal?
- a remote medical report?
- remote review of test results?

What is your opinion about your GP and your family practice for the past 6 months and regarding...

(please choose the option that best describes your opinion. If the question is not applicable in your case, please select 'not applicable/not relevant')

[1 = poor/2/3/4/5 = excellent/not applicable/not relevant]

- easiness of booking a suitable appointment in your family practice?
- easiness of getting through to the practice on the phone?
- easiness of getting through to your GP on the phone?
- time in the waiting room?
- quickness with which urgent problems get sorted?

How do you compare your GP and your family practice before and after the pandemic and regarding...

[no difference/was better before the pandemic/ was worse before the pandemic/Cannot compare]

- easiness of booking a suitable appointment in your family practice?
- easiness of getting through to the practice on the phone?
- easiness of getting through to your GP on the phone?
- time in the waiting room?
- quickness with which urgent problems got sorted?

Over the past 6 months, how often have you attended (for yourself or for a relative) a private doctor?

- not once
- 1 time
- 2 or 3 times
- 4 or 5 times
- 6 times or more

Over the past 6 months, how often have you attended (for yourself or for a relative) the emergency department of a public hospital?

- not once
- 1 time
- 2 or 3 times
- 4 or 5 times
- 6 times or more

Over the past 6 months, have you been admitted to a hospital (staying overnight)?

- no
- yes

About you**What is your gender?**

- female
- male

How old are you?

____ years

What is the highest level of education you have completed?

- 3rd grade or less
- 4th grade
- 6th grade
- 9th grade
- 12th grade
- university graduation

Which best describes your employment situation?

- employed
- full time student
- working and studying
- unemployed/job seeker
- disabled for work
- keeping house and/or family caring
- retired
- other situation: _____

What is your marital status?

- unmarried
- married/living in common law
- divorced/separated
- widowed

Excluding yourself, how many people usually live in your household?

- 0 (I live by myself)
- 1 person
- 2 persons
- 3 persons
- 4 persons
- 5 persons or more
- I live in a nursing home

In your household, are you a parent or legal representative of child under 18?

- no
- yes

In your household, are you the carer of someone with prolonged health issues?

- no
- yes

How often do you use the following devices?

[never/seldom/sometimes/often/daily]

- landline phone
- mobile with no internet connection
- mobile with internet connection/smartphone
- computer or tablet connected to the internet at work/school/university
- computer or tablet connected to the internet at home

How would you rate your general health?

- excellent
- very good
- good
- fair
- poor

Please state if, over the past 6 months, you have suffered from any of the following:

[yes/no]

- asthma (including allergic asthma)
- chronic bronchitis, chronic obstructive pulmonary disease or emphysema
- high blood pressure, that is, hypertension
- osteoarthritis, or degenerative joint disease
- low back pain or other chronic back problems
- neck pain or other chronic neck problems
- diabetes, excluding during pregnancy
- depression?

Over the past 6 months did you have any of the following severe impairment or disability?

[yes/no]

- deafness or severe hearing impairment
- blindness or severe sight impairment
- severe gait impairment
- severe emotional or psychological issue

How many different medicines do you usually take? (consider those you take at least once a month and also those you buy over the counter)

_____ different medicines

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- In 1 week?
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- In 4 to 8 weeks?
- In 9 to 12 weeks?
- After more than 3 months?
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When you request in family practice a home visit (for yourself or for a relative), usually do you get it...

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[never used/very difficult/difficult/easy/very easy]

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- scripts sent by text message?
- scripts sent by e-mail?

Regarding the patient portal, how easy or difficult do you find it for...
[never used/very difficult/difficult/easy/very easy]

- booking appointments with your GP?
- request repeat prescriptions?
- insert data on your health summary?

For how long do you usually wait when you request (for yourself or for a relative)...
[never tried/1 working day/2 or 3 working days/4 or 5 working days/more than 5 working days/I have tried but never got it]

- to speak with your GP over the phone?
- a reply to an e-mail?
- a video consultation?
- repeat prescriptions at the front desk?
- repeat prescriptions on the patient portal?
- a remote medical report?
- remote review of test results?

How do you rate the waiting time when you make a request (for yourself or for a relative)...
[never tried/very poor/poor/fair/good/very good]

- to speak with your GP over the phone?
- a reply to an e-mail?
- a video consultation?
- repeat prescriptions at the front desk?
- repeat prescriptions on the patient portal?
- a remote medical report?
- remote review of test results?

What is your opinion about your GP and your family practice for the past 6 months and regarding...

(please choose the option that best describes your opinion. If the question is not applicable in your case, please select 'not applicable/not relevant')

[1 = poor/2/3/4/5 = excellent/not applicable/not relevant]

- easiness of booking a suitable appointment in your family practice?
- easiness of getting through to the practice on the phone?
- easiness of getting through to your GP on the phone?
- time in the waiting room?
- quickness with which urgent problems get sorted?

How do you compare your GP and your family practice before and after the pandemic and regarding...

[no difference/was better before the pandemic/ was worse before the pandemic/Cannot compare]

- easiness of booking a suitable appointment in your family practice?
- easiness of getting through to the practice on the phone?
- easiness of getting through to your GP on the phone?
- time in the waiting room?
- quickness with which urgent problems got sorted?

Over the past 6 months, how often have you attended (for yourself or for a relative) a private doctor?

- not once
- 1 time
- 2 or 3 times
- 4 or 5 times
- 6 times or more

Over the past 6 months, how often have you attended (for yourself or for a relative) the emergency department of a public hospital?

- not once
- 1 time
- 2 or 3 times
- 4 or 5 times
- 6 times or more

Over the past 6 months, have you been admitted to a hospital (staying overnight)?

- no
- yes

About you**What is your gender?**

- female
- male

How old are you?

____ years

What is the highest level of education you have completed?

- 3rd grade or less
- 4th grade
- 6th grade
- 9th grade
- 12th grade
- university graduation

Which best describes your employment situation?

- employed
- full time student
- working and studying
- unemployed/job seeker
- disabled for work
- keeping house and/or family caring
- retired
- other situation: _____

What is your marital status?

- unmarried
- married/living in common law
- divorced/separated
- widowed

Excluding yourself, how many people usually live in your household?

- 0 (I live by myself)
- 1 person
- 2 persons
- 3 persons
- 4 persons
- 5 persons or more
- I live in a nursing home

In your household, are you a parent or legal representative of child under 18?

- no
- yes

In your household, are you the carer of someone with prolonged health issues?

- no
- yes

How often do you use the following devices?

[never/seldom/sometimes/often/daily]

- landline phone
- mobile with no internet connection
- mobile with internet connection/smartphone
- computer or tablet connected to the internet at work/school/university
- computer or tablet connected to the internet at home

How would you rate your general health?

- excellent
- very good
- good
- fair
- poor

Please state if, over the past 6 months, you have suffered from any of the following:

[yes/no]

- asthma (including allergic asthma)
- chronic bronchitis, chronic obstructive pulmonary disease or emphysema
- high blood pressure, that is, hypertension
- osteoarthritis, or degenerative joint disease
- low back pain or other chronic back problems
- neck pain or other chronic neck problems
- diabetes, excluding during pregnancy
- depression?

Over the past 6 months did you have any of the following severe impairment or disability?

[yes/no]

- deafness or severe hearing impairment
- blindness or severe sight impairment
- severe gait impairment
- severe emotional or psychological issue

How many different medicines do you usually take? (consider those you take at least once a month and also those you buy over the counter)

_____ different medicines